



हर कदम, हर डगर
किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद

AgriSearch with a human touch

Field Progeny Testing - II



केन्द्रीय भैंस अनुसंधान संस्थान

हिसार-125 001 (हरियाणा) भारत

Central Institute for Research on Buffaloes

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2013

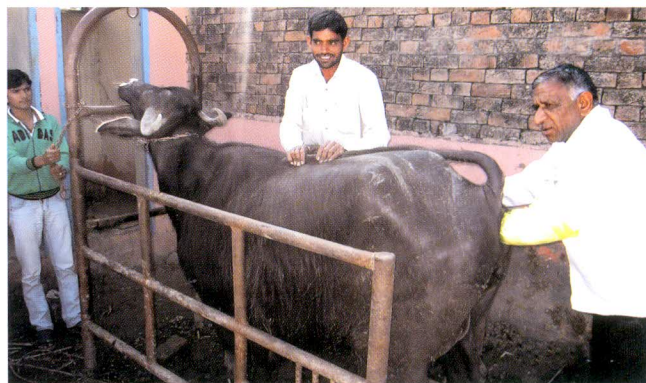
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Buffalo plays an important role in the rural economy through their contribution to food, draught power, income and employment generation. India has over 122 million buffaloes constituting about 57 per cent of the total world population. Despite being less in number than cattle (200 million) in the country buffaloes currently produce 72 million metric tones of milk which is about 57 per cent of the total milk (126 MT) produced in the country. Besides milk, 1.62 million metric tons of meat is also produced from this animal. Buffalo draft power also accounts for about 10 per cent of the total draft power contributed by the work animals in the country. Farmers maintain 2-3 buffaloes in mixed small farming system which support their family earnings. Women play leading role in managing various activities of buffalo rearing. In addition to milk, meat and draft buffaloes also produce 0.52 million metric tones of skin and hides in the country. Thus, the buffalo has a great significance for the country as a whole and for the farming community in particular.



India is home not only to the world famous Murrah buffalo breed but also to several other high producing buffalo breeds with unique characteristics such as Jaffarabadi, Nili-Ravi, Pandharpuri, Surti and Bhadawari with their unique characteristics. Even the uniquely distinct swamp buffalo also has its habitat in the north-eastern region of India. In order to make concerted and consistent efforts for the development of buffaloes, the Indian Council of Agriculture Research (ICAR) established Central Institute for Research on Buffaloes at Hisar, Haryana on 1st February, 1985 with a mandate to undertake research aimed at conserving and improving buffalo germplasm, enhancing productivity and efficiency of production, coordinating research through 14 centers of Network Project on Buffalo Improvement and transfer of technologies.

Murrah is the most important breed among buffaloes and draws maximum demand of its germplasm in the country as well as abroad. But the problem of scarcity of genetically superior and tested bulls and their increasing demand is a hindrance for improvement of nondescript breeds of buffaloes in the country. It is, therefore, essential to develop superior germplasm and test them efficiently on large organized herds as well as available with farmers. Progeny testing under institutional and field conditions besides providing superior bulls for use in development programmes helps in developing elite breeding herds. Field Progeny Testing Programme was initiated during 2001-02 and artificial insemination (AI) from genetically superior bulls under Network Project was taken up in villages around Hisar and now covering approximately 4000 breedable buffaloes. Initially 6 villages were included in this programme namely; Bir Babran, Juglan, Dhiktana, Kheri Barki, Kirara and Jewra. Subsequently, Sarsod, Bichpuri, Bado Patti and Bugana were added during last three years.

The details of AI, pregnancies, calves born and performance of daughters in the adopted villages during past eleven years are given in Table 1.

Table 1: Performance of FPT Programme on Farmers' Buffaloes

Duration	A.I.	Pregnancies	CR%	Calvings	Females Born	Daughters Recorded	Av. AFC (months)	Av. Milk Yield (kg/day)	Daughters Available for Recording
2001-02	139	25	17.98	15	7	-	-	-	-
2002-03	540	236	43.70	147	73	12	42.02	7.28	-
2003-04	1001	356	35.56	237	129	14	46.61	6.40	-
2004-05	1298	566	43.61	361	173	21	39.63	6.51	-
2005-06	1999	1009	50.48	744	345	55	43.45	7.76	-
2006-07	2102	1139	54.19	650	305	48	44.36	8.14	-
2007-08	2132	1104	51.78	694	341	57	42.65	7.97	1
2008-09	2176	1086	49.91	955	477	44	36.85	7.94	35
2009-10	2803	1450	51.73	1276	627	1	28.70	-	135
2010-11	3433	1743	50.77	787	377	-	-	-	167
2011-12	3308	1756	53.08	1103	557	-	-	-	271
Overall	20931	10470	50.02	6969	3411	252	42.09	7.64	609

It is obvious from the results that there was more than 6 times increase in the AI done since 2002-03. The appraisal of the results indicate that the number of inseminations started increasing after 2002-03. Initially, farmers had reservations about the practice of AI but later due to higher conception rate and breed improvement the farmers started showing interest in artificial inseminations. The conception rate also started increasing from 18 per cent in 2002-03 to 53 per cent in the year 2011-12. This could be possible due to number of interventions like training of farmers in identifying the proper heat symptoms and creating facilities of AI in morning and evening in all the adopted villages. Besides, farmers were also motivated and persuaded to adopt the artificial insemination through meetings and regular check ups. It is expected to have about 4000 inseminations by the end of 2012-13.

In all 10470 pregnancies were recorded from 20931 AI with average conception rate of 50.02 percent during last 11 years. Out of 6969 calvings 3411 female progenies were born which is approximately 49 per cent of the conception and 17 per cent of AI. A total of 3501 pregnant buffaloes were sold before they could deliver the calf. The sale of dam after calving along with progenies is also very frequent. Some of the progenies are also sold even after weaning till it reaches puberty. The process of selling of progenies continues at conception and after calving before the completion of lactation. This hampers the complete recording lactation milk yield. The sale of buffaloes at different stages ultimately results into loss of progenies. Thus there is a need to educate the buffalo breeders that maximum number of animals should be retained and progenies may be kept for at least one lactation for the purpose of progeny testing.

A total of 1679 artificial inseminations were done during 2004 to 2006 from 17 bulls of set VIII out of which 737 pregnancies were recorded with a conception rate of about 44 per cent (Table 2). Female calves born were 199 and only 23 daughters were retained till calving, out of which 18 daughters could be recorded for complete lactation. This shows the loss of progenies at different stages of growth.

Table 2: AI, Conception, Calving and Daughters Recorded – 8th Set

	Bull No.																	Total
	2250 VIII	2308 VIII	2396 VIII	2422 VIII	2522 VIII	2479 VIII	1492 VIII	1509 VIII	1867 VIII	1868 VIII	1875 VIII	1893 VIII	5083 VIII	5054 VIII	5049 VIII	4865 VIII	4813 VIII	
AI	30	178	47	179	87	86	95	105	90	146	64	159	69	109	93	91	51	1679
Pregnancies	13	61	14	63	40	37	62	56	33	64	31	67	29	69	32	45	21	737
Daughters Born	5	16	3	19	10	9	8	10	4	13	10	17	14	35	6	14	6	199
Daughters Calved	1	1	-	-	4	2	1	-	-	2	1	1	3	4	1	1	1	23
Complete Recording	1	1	-	-	4	2	0	-	-	2	1	0	3	3	0	0	1	18
Av AFC (months)	46.63	40.07	-	-	38.88	37.97	47.00	-	-	40.47	40.33	44.73	39.31	41.88	44.40	35.60	36.30	40.56
Av Milk Yield (kg)	6.43	6.16	-	-	5.66	7.03	8.98	-	-	7.54	7.03	7.22	7.24	6.99	8.30	6.00	6.64	6.86

Fourteen bulls in Set IX were used from 2006 to 2007 and 3418 inseminations were performed which resulted in 1744 pregnancies with a conception rate of about 51 per cent (Table 3). Total number of females born with the bulls of this set was 556. The number of daughters retained by the farmers was comparatively more as 89 daughters were calved. Out of 89 calved daughters 58 completed the lactations and rest 31 was sold before the completion of their lactation. The increasing interest of farmers to retain the daughters was primarily due to the concerted efforts of the project workers to educate the farmers. The average age at first calving and milk yield of progenies (89) calved was 44.28 months and 7.88 kg/day respectively. The average milk yield of daughters of 9th set was better than that of 8th set.

Table 3: AI, Conception, Calving and Daughters Recorded – 9th Set

	Bull No.															Total
	2582 IX	2592 IX	2720 IX	2910 IX	1903 IX	1964 IX	1913 IX	1940 IX	1575 IX	1994 IX	5112 IX	5197 IX	5218 IX	5258 IX		
AI	288	253	363	175	191	158	142	188	363	268	269	246	99	415	3418	
Pregnancies	151	105	170	86	115	72	72	96	193	141	149	116	64	214	1744	
Daughters Born	57	51	69	37	39	20	21	33	56	32	37	35	15	54	556	
Daughters Calved	6	8	9	11	6	5	6	3	10	9	4	6	3	3	89	
Complete Recording	5	6	5	6	3	1	5	3	9	6	2	3	2	2	58	
Av AFC (months)	38.92	43.71	45.73	42.73	44.52	44.36	42.49	35.75	47.00	44.52	47.48	44.87	53.18	45.09	44.28	
Av Milk Yield (kg)	7.20	7.01	7.85	8.04	8.29	8.27	7.83	7.93	7.39	8.38	8.46	8.13	9.11	8.16	7.88	

Performance Recording of Daughters in the Field



Bull No.	507
Set	X
Location	IVRI, Izatnagar
Date of Birth	14.12.2003
Dam No.	341
Dam's Best Yield	2572 kg



91
26
26/10/2008
04/12/2012
49.27 months
11.1 kg
Sh. Surta S/o Sh. Mange Ram
Bir

Dghtr. No.
Chip No.
D.O.B.
D.O.C.
A.F.C.
P.Y.
Owner
Village

339
09
22/05/2009
15/11/2012
41.77 months
10.4 kg
Sh. Randhir Godara S/o Sh. Bhagwana
Juglan



200
45
24/08/2008
03/07/2012
46.30 months
9.8 kg
Sh. Abhey Ram S/o Sh. Dharam Chand
Jewra

Dghtr. No.
Chip No.
D.O.B.
D.O.C.
A.F.C.
P.Y.
Owner
Village

189
12
16/12/2008
16/05/2012
41.00 months
9.4 kg
Sh. Bhagwana S/o Sh. Pat Ram
Kirara



From 13 bull of Set X 3400 AI were done from 2007 to 2009, which resulted in 1795 pregnancies with a conception rate of about 53 per cent (Table 4). A total of 600 females were born, out of which 90 daughters were calved with 41.29 months of average age at first calving. Fifteen daughters are yet to calve and available in the field for future recordings. Out of 90 daughters calved 73 are expected to complete the lactation as milk yield of some daughters are being recorded. The performance of daughters calved of set 10th was better than the performance of daughters 9th set in terms of average age at first calving. The average milk yield of daughters completed the lactation of this set is 8.02 kg per day. The milk yield will be documented after remaining daughters completes the lactation.

Table 4: AI, Conception, Calving and Daughters Recorded - 10th Set

	Bull No.													Total
	507 X	1693 X	2045 X	2062 X	2073 X	2074 X	2083 X	2090 X	3103 X	3631 X	5396 X	ND1 X	ND2 X	
AI	266	204	361	350	235	316	325	257	210	225	256	195	200	3400
Pregnancies	143	100	186	180	123	158	189	141	113	120	132	101	109	1795
Daughters Born	47	43	56	69	38	54	56	43	46	45	38	32	33	600
Daughters Calved	9	8	11	14	11	7	5	7	5	4	2	1	6	90
Recording	9	5	8	11	8	7	3	6	4	4	2	1	5	73
Daughters Available	1	1	2	3	1	0	2	1	3	1	0	0	0	15
Av AFC (months)	44.58	43.35	41.28	41.68	41.49	43.97	44.29	38.57	36.86	35.81	41.23	36.53	38.08	41.29

A total of 4058 AI were done from 14 bulls of set XI and 2066 pregnancies were recorded with a conception rate of about 51 per cent and 892 female calves were born (Table 5). One bull namely Golu belonging to a farmer was also included in the set for testing. The calvings of daughters of this set has been started and 21 daughters have already calved and 154 daughters are standing in the villages for future recordings.

Table 5: AI, Conception, Calving and Daughters Retained - 11th Set

	Bull No.														Total
	2133 XI	2148 XI	2154 XI	3226 XI	3255 XI	3267 XI	3591 XI	5414 XI	5489 XI	5496 XI	5516 XI	12 XI	ND8 XI	Golu XI	
AI	292	315	187	243	307	399	391	175	358	285	397	390	183	138	4058
Pregnancies	153	171	99	101	149	202	206	80	184	160	182	199	110	70	2066
Daughters Born	75	75	44	41	66	86	90	33	70	69	84	94	45	20	892
Daughters Calved	1	1	-	1	3	4	2	1	2	-	-	6	-	-	21
Recording	1	0	-	1	3	4	2	1	1	-	-	5	-	-	18
Daughters Available	16	16	11	5	9	20	14	2	11	11	12	16	7	4	154

Three bulls of farmers were also included in progeny testing of 12th set. From 12 bulls of set XII 4569 inseminations were done and 2356 pregnancies were obtained with a conception rate of about 52 per cent. Out of 538 female calves born, 232 daughters were standing in the field for future recordings (Table 6).

Table 6: AI, Conception, Calving and Daughters Retained – 12th Set

	Bull No.												Total
	183 XII	220 XII	2176 XII	2177 XII	2185 XII	3598 XII	5604 XII	5710 XII	5720 XII	R10 XII	R11 XII	KHR XII	
AI	501	398	453	458	380	418	296	313	238	420	461	233	4569
Pregnancies	253	205	234	251	185	218	145	152	135	206	239	133	2356
Daughters Born	68	56	64	61	40	44	33	27	39	30	47	29	538
Daughters Standing	34	19	26	22	14	22	14	13	10	11	34	13	232

There are many constraints in Progeny Testing Programme under the field conditions due to loss of progenies because of sale of buffaloes. Therefore, a study was done to find out how many progenies are retained by the farmers till they calved and complete their first lactation. Bull-wise AI, conception and daughters retained by the farmers of different sets are furnished in Table 7. It is evident from the table that a total of 3400 inseminations (Set X) in the field with approximately 53% conception rate produced 600 female progenies, of

Performance Recording of Daughters in the Field



Bull No.	2062
Set	X
Location	GADVASU, Ludhiana
Date of Birth	04.08.2004
Dam No.	1819
Dam's Best Yield	2672 kg



Dghtr. No.	173
Chip No.	06
D.O.B.	26/08/2008
D.O.C.	24/07/2012
A.F.C.	46.93 months
P.Y.	12.3kg
Owner	Sh. Nanak S/o Sh. Nanda
Village	Dhiktana



Dghtr. No.	106
Chip No.	40
D.O.B.	30/04/2009
D.O.C.	07/11/2012
A.F.C.	42.23 months
P.Y.	8.8 kg
Owner	Sh. Karambir S/o Sh. Ram Chander
Village	Bir



Dghtr. No.	272
Chip No.	35
D.O.B.	20/07/2009
D.O.C.	05/10/2012
A.F.C.	38.50 months
P.Y.	9.1 kg
Owner	Sh. Radhey S/o Sh. Har Lal
Village	Jewra

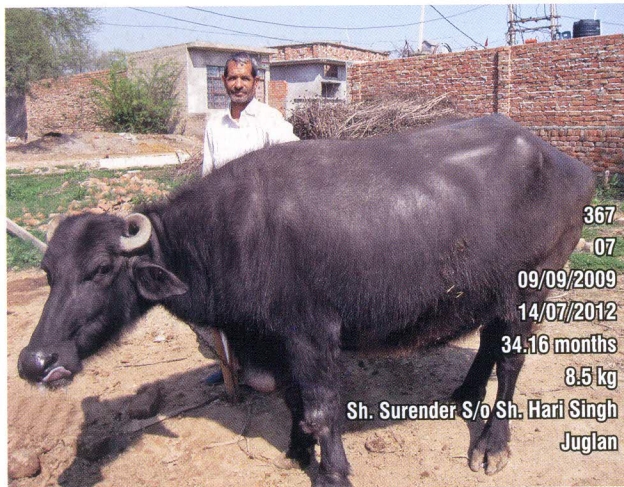


Dghtr. No.	195
Chip No.	34
D.O.B.	28/03/2009
D.O.C.	17/10/2012
A.F.C.	42.63 months
P.Y.	6.2 kg
Owner	Sh. Balwan S/o Sh. Dalip Ram
Village	Kirara

Performance Recording of Daughters in the Field

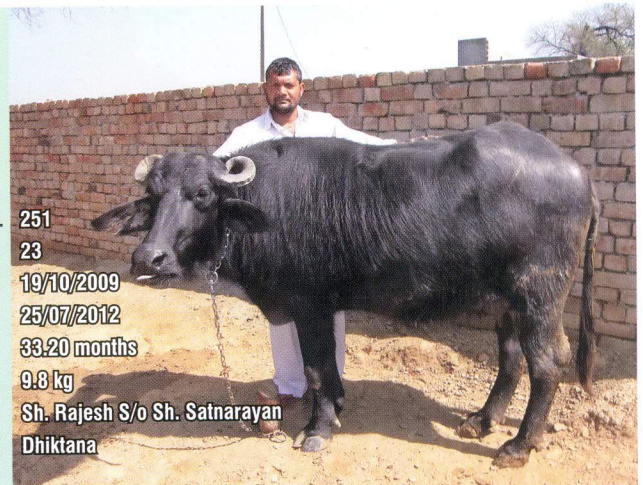


Bull No. 3267
Set XI
Location CIRB, Hisar
Date of Birth 27.09.2004
Dam No. 2263
Dam's Best Yield 2489 kg



367
07
09/09/2009
14/07/2012
34.16 months
8.5 kg
Sh. Surender S/o Sh. Hari Singh
Juglan

Dghtr. No. 251
Chip No. 23
D.O.B. 19/10/2009
D.O.C. 25/07/2012
A.F.C. 33.20 months
P.Y. 9.8 kg
Owner Sh. Rajesh S/o Sh. Satnarayan
Village Dhiktana



251
23
19/10/2009
25/07/2012
33.20 months
9.8 kg
Sh. Rajesh S/o Sh. Satnarayan
Dhiktana

Owner Sh. Rajesh S/o Sh. Satnarayan
Village Dhiktana



355
68
28/11/2009
28/08/2012
33.00 months
9.0 kg
Sh. Manoj Kumar S/o Sh. Balbir Likku
Jewra

Dghtr. No. 239
Chip No. 28
D.O.B. 19/11/2009
D.O.C. 08/10/2012
A.F.C. 34.63 months
P.Y. 8.9 kg
Owner Sh. Rajpal S/o Sh. Sardara
Village Kirara



239
28
19/11/2009
08/10/2012
34.63 months
8.9 kg
Sh. Rajpal S/o Sh. Sardara
Kirara

which 177 females were retained up to the age of 3 years. Out of these 90 daughters calved and recorded while 15 daughters are yet to be calved for recording. Thus for testing a bull in the field we need to perform 500 inseminations in order to obtain at least 15 complete records of daughters for progeny test evaluation. The insemination of set 13th was started in September 2011 and set 14th will begin from March 2013. However, the calving process of set 13th will continue till the end of 2013. The physical identification using injectable microchips has been done in all female progenies born and standing at various field unit centers. Activities like infertility treatment camps, demonstration of technologies, deworming camps etc are regularly organized under the aegis of FPT programme in these villages

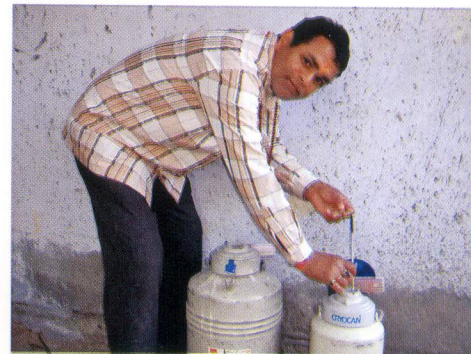
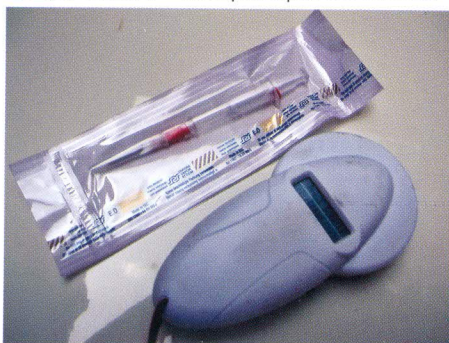


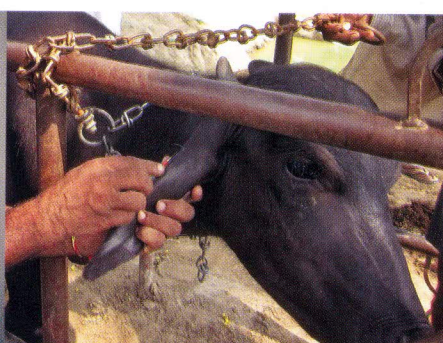
Table 7: Set-wise AI, Conception, Calving and Daughters' Performance

Set No.	No. of Bulls	AI	Pregnancies	Calving		Daughters Retained			Daughters Calved	Av. AFC (month)	Av. Milk Yield (kg/day)	Daughters Available for Future Recording
				Total	Females	Upto 1 Year	Upto 2 Years	Upto 3 Years				
VIII	17	1679	737	440	199	71	57	36	23	40.56	6.86	-
IX	14	3418	1744	1222	558	338	183	145	89	44.28	7.88	-
X	13	3400	1795	1252	600	319	246	177	90	41.29	8.02	15
XI	14	4058	2066	1825	892	383	230	-	21	34.65	7.80	154
XII	12	4569	2356	1119	538	-	-	-	-	-	-	232
XIII	9	5905*	3794#	801	410	-	-	-	-	-	-	208
												609

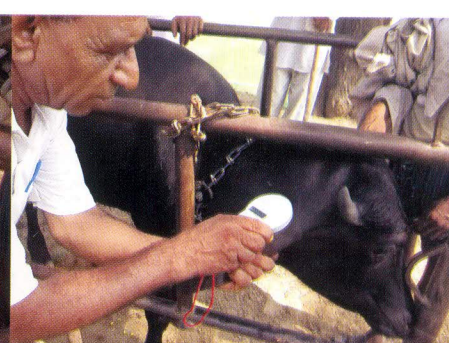
*AI upto Jan 2013 *Conception upto AI of Oct 2012



Microchip & Reader



Inserting Microchip



Reading from Microchip Reader

Major Achievements

Acceptability of AI by the buffalo owners has increased in the field.

The overall conception rate of 50.02 percent in the field has been achieved.

Major Constraint

The frequent sale of animals at different stages by the farmers affects the field progeny testing programme. Out of 100 inseminations only 4-5 daughters complete first lactation for milk recording.



Performance Recording of Daughters in the Field

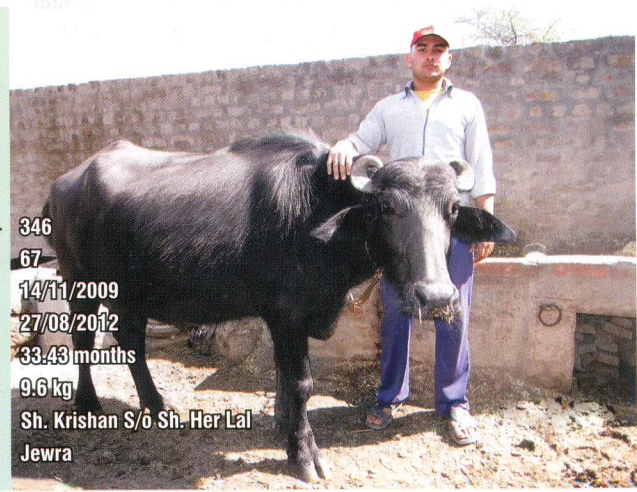


Bull No. 12
Set XI
Location CCS HAU, Hisar
Date of Birth 29.05.2005
Dam No. 1180
Dam's Best Yield 2858 kg



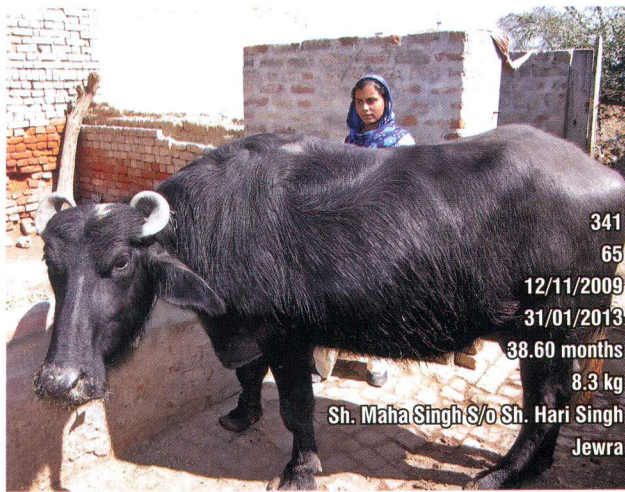
232
12
28/08/2009
06/09/2012
36.27 months
9.1 kg
Sh. Ram Sahai S/o Sh. Beg Raj
Kheri Barki

Dghtr. No.
Chip No.
D.O.B.
D.O.C.
A.F.C.
P.Y.
Owner
Village



346
67
14/11/2009
27/08/2012
33.43 months
9.6 kg
Sh. Krishan S/o Sh. Her Lal
Jewra

Dghtr. No.
Chip No.
D.O.B.
D.O.C.
A.F.C.
P.Y.
Owner
Village



341
65
12/11/2009
31/01/2013
38.60 months
8.3 kg
Sh. Maha Singh S/o Sh. Hari Singh
Jewra

Dghtr. No.
Chip No.
D.O.B.
D.O.C.
A.F.C.
P.Y.
Owner
Village



282
40
20/08/2009
07/09/2012
36.57 months
10.3 kg
Sh. Ram Chander S/o Sh. Gunder
Jewra

Dghtr. No.
Chip No.
D.O.B.
D.O.C.
A.F.C.
P.Y.
Owner
Village

Success Story

Popularization of AI

Field progeny testing programme was started by this institute in the year 2001. However, the progress of the project was very slow upto 2003 as only 679 artificial inseminations could be performed in first two years. Therefore, it was considered imperative to know the reasons there off. Group meetings and group discussions were organized with the farmers and they were motivated to adopt this practice. Through this method it was found that farmers had reservation about the practice and doubts about the right time of artificial inseminations. They were specifically told to observe the mucus discharge in buffaloes. Therefore, through participatory extension about all the interested farmers were educated about benefits of practice. Over the years some farmers have completely switched over to AI from natural service. Sh. Bani Singh of village Dhiktana is one of them. At present he owns 3 buffaloes and all of them are yielding more than 15 liters of milk. He prefers only AI whenever his buffalo is in heat and contacts the village inseminators or the institute to avail this facility. He has also helped in popularising the technology in village Dhiktana and has now acquired the status of a local opinion leader for AI. He is also rearing a young bull which is of very high quality. Sh. Bani Singh is interested to include this bull in the progeny testing programme of the institute.

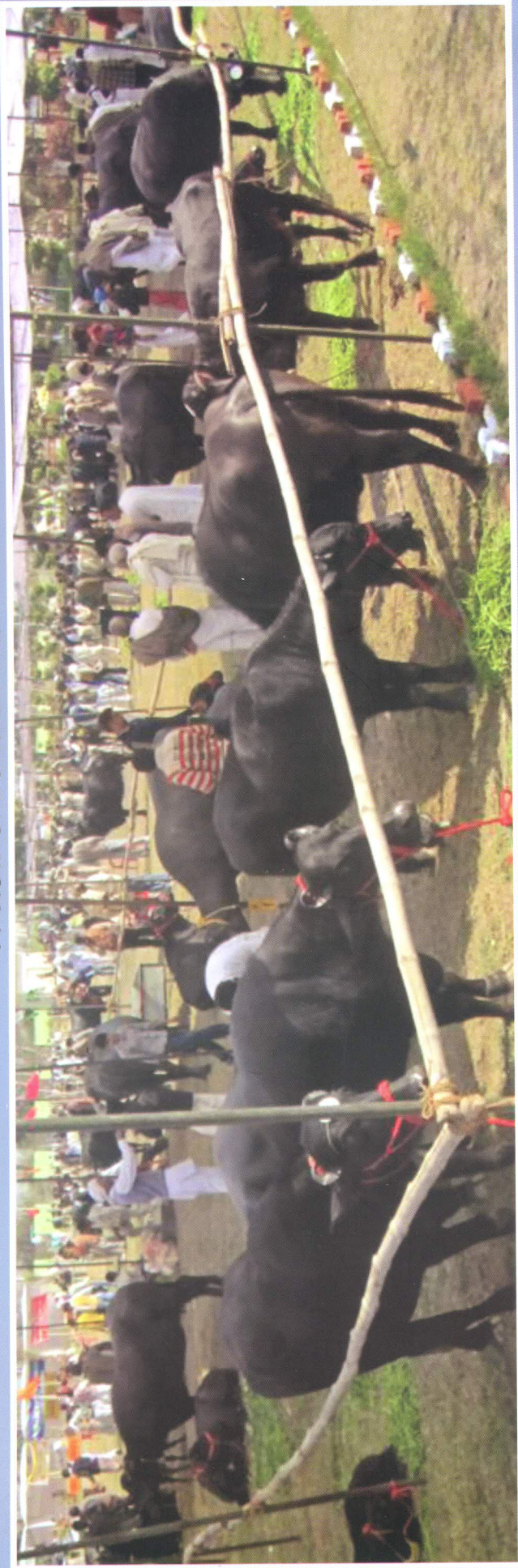


Sh. Bani Singh with his Bull



Dr RS Paroda, Chairmana, Haryana Kisan Ayog during his Visit to Buffalo Mela at the Institute

A View of Buffalo Mela



Glimpses of Progeny Rallies Organised in Villages and at the Institute

