

**Evaluation of the Performance of BIRD's Artificial  
Insemination Centers in Karnataka**

**Draft Report**

**Submitted to**

**Karnataka Evaluation Authority (KEA)**

**Government of Karnataka**

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**EVALUATION OF THE PERFORMANCE OF BIRD'S  
ARTIFICIAL INSEMINATION CENTRES  
IMPLEMENTED BY DEPARTMENT OF ANIMAL  
HUSBANDRY AND VETERINARY SERVICES**

**EXTERNAL  
EVALUATION**



ಕರ್ನಾಟಕ ಮೌಲ್ಯಮಾಪನ ಪ್ರಾಧಿಕಾರ  
Karnataka Evaluation Authority

**STUDY CONDUCTED FOR  
KARNATAKA EVALUATION AUTHORITY  
AND  
DEPARTMENT OF ANIMAL HUSBANDRY AND  
VETERINARY SERVICES,  
GOVERNMENT OF KARNATAKA**

**BY**

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## PREFACE

The Government of Karnataka has been supporting the BAIF Institute of Rural Development –Karnataka (BAIF-K) AI centres under Centrally Sponsored Scheme to promote and facilitate Artificial Insemination. The study on Evaluation of the Performance of BIRD's Artificial Insemination Centres in Karnataka' was initiated by the Department of Animal Husbandry and Veterinary Services (AH&VS) through Karnataka Evaluation Authority (KEA). The study is outsourced by KEA to the ECO NABCONS. A sample of 28 BIRD-K AI Centres and 7 each from AH&VS and KMF with 382 beneficiaries was drawn from the seven districts of Bagalkot, Bellary, Gadag, Kalaburagi, Raichur, Vijayapura and Yadgir in North Karnataka for the study. The findings of the study indicate that the project objectives have been achieved to a large extent. The doorstep delivery of AI services by BAIF-K has led to increase in breeding efficiency and to increased productivity in the long run. The only gray area that needs attention is the follow up of post insemination by farmers and adequate monitoring.

I expect that the findings and recommendations of the evaluation study will be useful to the Department in its endeavour to strengthen the dairy industry in the State.

The study received support and guidance of the Principal Secretary and the Secretary Planning, Programme Monitoring and Statistics Department, Government of Karnataka. The officers of the Department of Animal Husbandry and Veterinary Services have also extended their support and cooperation by providing the necessary information. The review of the draft report by members of the Technical Committee of KEA, and an Independent Assessor, has provided useful insights and suggestions to improve the draft report. I duly acknowledge the assistance rendered by all in successful completion of the study.

  
Chief Evaluation Officer  
Karnataka Evaluation Authority

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## List of Acronyms and abbreviations

AD	Assistant Director
A.I.	Artificial Insemination
AIT	Artificial Insemination Technician
ACS	Additional Chief Secretary
AH & VS	Animal Husbandry and Veterinary Services.
AICRP	All India Coordinated Research Project.
BAIF	BAIF Development Research Foundation
BIRD-K	BAIF Institute for Rural Development-Karnataka
CB	Crossbred
CCDI	Comprehensive Composite Development Index
CMU	Central Monitoring Unit
CRS	Central Research Station
CSCC	Centralised Semen Collection Centre
CSS	Centrally Sponsored Scheme
DAHD&F	Department of Animal Husbandry, Dairying And Fisheries
DAH&VS	Department of Animal Husbandry and Veterinary Services
DCS	Dairy Co-operative Societies
DD	Deputy Director
FS	Frozen Semen
FSS	Frozen Semen Station
FYP	Five Year Plan
GOI	Government of India
GOK	Government of Karnataka
HF	Holstein Friesian
KEA	Karnataka Evaluation Authority
KLDA	Karnataka Livestock Development Agency
KMF	Karnataka Milk Federation
KVA&FSU	Karnataka Veterinary Animal and Fisheries Sciences University
LB & TC	Livestock Breeding and Training Centre
LN <sub>2</sub>	Liquid Nitrogen
MAITRI	Multi-Purpose AI Technician In Rural India
MSP	Minimum Standard Protocol
NDDB	National Dairy Development Board
NPBBDD	National Programme for Bovine Breeding and Dairy Development
NSS	Nandini Sperm Station
RFP	Request for Proposal
SDP	Special Development Plan
SLB & TC	State Livestock Breeding and Training Center
SSCC	State Semen Collection Center
ToR	Terms of Reference
VA	Voluntary Agency

## Executive Summary

The overall cattle population in the country has shown a decline by 4.10% between the last two censuses (2007 & 2012). On further analysis of the data it was evident that the male population has declined substantially both in case of indigenous and crossbreds. The prevailing trend is to go for crossbred/ improved/ graded animals to have females having better/ improved productivity. With a view to achieving superior genetic traits in progeny, Artificial Insemination (AI) process is followed using semen of proven bulls. In this connection, the department of Animal Husbandry and Veterinary Services (AH &VS) Government of Karnataka (GOK), has been supporting BAIF Institute of Rural Development-Karnataka (BIRD-K) AI centers under the Centrally Sponsored Scheme (CSS). These centers help promote and facilitate Artificial Insemination (AI) using frozen semen of pedigree sires of Cattle and Buffaloes. The department of AH &VS, GoK entered into an agreement with the BIRD-K to promote and facilitate Artificial Insemination (AI) using frozen semen of pedigree sires of Cattle and Buffaloes. As per the agreement, BIRD has established 73 AI centres in seven districts of Karnataka.

The Government of Karnataka decided to evaluate the performance of the said scheme through Karnataka Evaluation Authority (KEA). KEA allotted the evaluation study to NABCONS, a wholly owned subsidiary of NABARD.

The main objectives and purposes of the study are:

1. To evaluate as to whether the amount provided under the scheme was utilized by BIRD-K for the purpose and objectives laid down in the scheme and MoA?
2. To examine whether there is need for continuation of the scheme in the present form?
3. To compare the performance of BIRD-K centers with the AH Dept. and KMF centers, respectively.

The field study was conducted from second fortnight of January 2016 to first week of March 2016 covering 28 AI centres of BIRD-K and seven AI centres each of KMF and Department of AH &VS, GoK. A total of 382 beneficiaries of these AI centres were also covered for the Study in seven districts of the State. The major findings of the study are summarized below:



## **1. Adequacy of Infrastructure Provided by BIRD**

The staff and equipment provided by BIRD-K at each AI center are adequate. The qualification of each of the AI technician is as per the minimum prescription in this regard. They are trained intensively at their training and demonstration campus at S Lakkihalli, Tiptur taluk (Tumakuru district). The training includes both theory and practical which is followed by field level training/internship for a certain minimum period (say three months) to ensure that they have perfected the technique. After this they are deployed in the field.

## **2. Arrangements for supply of LN<sub>2</sub>**

The BIRD-K has made proper arrangement for supply of LN<sub>2</sub> at each center through its input supply division located at Dharwad. The LN<sub>2</sub> levels in the cryocans is measured from time to time. The LN<sub>2</sub> was topped up regularly as per the requirement.

## **3. Source of Semen**

The Semen is sourced from the Central Research Station (CRS) of BAIF at Uruli Kanchan, Maharashtra.

## **4. Semen Quality**

The quality testing and certification aspects of semen are taken care of by CRS, BAIF at Uruli Kanchan.

## **5. Adherence of Breeding Policy of Government of Karnataka**

The cattle breeds whose semen is used in AI include Holstein Friesian (HF), Jersey, Khillar, Amrit Mahal, Hallikar, Krishna Valley, Deoni, Ongle while in case of buffaloes, the semen of Surti and Murrah is used. In absence of any record of dams, it is difficult to conclusively establish as to whether the semen used was in conformity with the breeding policy. By and large the breeding policy appears to have been followed. While use of semen of indigenous cattle breeds and buffaloes can be considered as per the breeding policy, the use of exotic and crossbred semen leaves some scope for doubt about higher exotic inheritance in the progeny. However, the study team did not observe many instances where the exotic inheritance has crossed 75% blood level. There is a need to have a proper checklist for use of exotic (100% blood level) as also crossbred (62.5 and 75% blood level) semen. The semen of crossbred bulls

with 62.5% and 75% blood level as also semen of murrah buffalo bulls needs to be used more judiciously.

## **6. Service charge for AI**

The BIRD-K collects the service charges @ Rs 15 per AI as per the MoU and deposits the same to the GoK at monthly intervals regularly.

## **7. The Conception rate**

The performance of BIRD-K centers in terms of conception rates may be treated as acceptable. The target for each center is fixed with reference to 2.5 AIs per conception and the average services per conception were 2.35 which are quite commendable.

## **8. Conception to Calving Ratio**

As a regular follow up, the AI technician conducts Pregnancy Diagnosis (P.D). However, at the time of the examination all the animals are not available for PD due to reasons such as the beneficiary refusing to allow the animal for examination, the animal or the beneficiary not traceable, the beneficiary discontinued participation, the beneficiary sold or transferred the animal, animal died etc. Similar is the case while undertaking calving follow-up. As such there is no cent per cent follow up of animals for pregnancy diagnosis as also calving follow up in respect of confirmed pregnancies. The conception to calving percentage ranged between 25-90%. The average works out to 57%, which is very low. The correct picture in this regard will only emerge, if each and every conception/pregnancy is followed up and the reasons for non availability of pregnant animals for calving follow up are recorded and suitably accounted for. There is a need to streamline the reporting system so that correct picture emerges about success rates with reference to number of services per conception, calving percentage etc.

## **9. Breeding performance (Karnataka vis-à-vis other states)**

Government of India (GOI), Department of Animal Husbandry and dairying (DAH&D) and NABARD Consultancy services (Nabcons), Mumbai had organized a national seminar for implementation of National Project on Cattle and Buffalo Breeding (NPCBB). As per the key note address delivered by the Joint Secretary, DAH&D, the conception rate is more than 50% (< 2 straws per conception). Under Special Development Plan (SDP), The targets fixed for services per conception are based on 40% conception rate i.e. 2.5 services per conception. The

overall no. of services per conception works out to 2.35. This compares well with the standards of GoK as also other states.

#### **10. Variation in Achievement from District to District**

The quantitative and qualitative performance under a breeding programme may be a result of complex factors. Certain factors may be beyond the control of the AI center. The qualitative achievement is always a better indication of performance which can be handled with improved management and care. The major factors can be categorized under three heads namely, environmental factors, absence of good recording system and timing of insemination in relation to oestrus. The performance of Raichur district was the lowest both in terms of quantity and quality. The ranking of Bagalakote was at the top in terms of quantitative performance. However, in terms of quality the Bagalkot district ranked fifth (At State Level also Bagalkote ranked Seventh in terms of AI done during the year 2014-15, but its rank with reference to number of conceptions and calvings was tenth). Similarly, Yadagiri district ranks first in terms of quality but quantitatively its rank is sixth.

#### **11. Management Information System (MIS)**

The BIRD-K has been submitting the required types of reports to GOK as per the prescribed periodicity.

#### **12. Monitoring Performance of BIRD-K Centers by GOK at District level**

The monitoring of the performance of BIRD-K Centers by DAH&VS was not uniform and regular at different levels in the district. The conceptions and calvings are not verified by the AD/DD at regular intervals. However, wherever such verification is done in stray cases/on random basis, the reports are sent to higher authorities for necessary action. In Raichur district no verification/follow up was done by DAH&VS during the four year period (2011-2012 to 2014-15).

#### **13. District Level Review Committee Meeting (till the end of 31.03.2015)**

As per the information provided by BIRD-K, in Kalaburgi and Yadagiri districts two meetings each were held while in the remaining districts only one meeting was held during the five year period.

#### **14. State level Review committee meeting (up to 18.09.2015)**

The state level review committee meetings were not held during the years 2010-11 and 2011-12 as also during the year 2013-14.

#### **15. Comparative performance of AI Centers (BIRD-K, KMF and DAH&VS)**

The BIRD-K centers are found to be better than the centers operated by KMF and DAH&VS. However, as regards the end result of the service, the farmers interviewed reported that the no. of services required per conception did not exceed 2 AIs per conception in most of the cases where the services were sought from all the three agencies, however the performance of KMF and DAH & VS Centers could not be precisely assessed due to non availability of data in required form.

#### **16. Cost of AI services by different agencies**

The per service cost incurred by DAH&VS was Rs 32 against which an amount of Rs 15 is recovered by the department. In case of BIRD-K the cost is Rs 282 against which an amount of Rs 15 is recovered from the farmers as per the MoU. In case of KMF centers the data are not available and as such the cost could not be worked out. The costs recovered from the farmers vary widely from society to society.

#### **17. Feedback from farmers about the services rendered by BIRD-K AI centers**

The farmers who utilized the services have good opinion about the timeliness and quality of services provided to them by BIRD-K under the scheme. The BIRD-K has gained respect and gratitude of beneficiaries in their respective areas of operation of their centers because of their ability to provide the service in effective and efficient manner. They have also developed a rapport among farmers and enjoy a good credibility in their respective areas of operation.

#### **18. Continuation of the scheme**

The scheme should be continued and expanded with mutual consent of both the parties in North Karnataka as also in other parts of Karnataka depending upon feasibility in this regard. Along with breeding service, the centers may also be involved in first aid and other related extension activities like supply of mineral supplement, fodder mini-kits, fodder demonstration, promotional activities. The breeding service being a critical one, unless there is a plan 'B' to

provide access to farmers for such a critical service, it may not be prudent to discontinue the services of BIRD-K abruptly. The BIRD-K AI centers appear to be a successful model and needs to be taken forward.

### **19. Overlap of efforts of DAH&VS, KMF and BIRD-K**

There is no overlap of efforts of DAH&VS, KMF and BIRD-K. Such instances do not occur as there is a unwritten clear cut demarcation in the area of operations. The DAH&VS normally do not provide service wherever the services of BIRD-K or KMF are available. The area of operation of BIRD-K centers doesn't cover the villages where functional KMF dairy societies exist.

### **20. Methodology for calculation of conception rates**

The success rate for conception of AI service may be considered with reference to number of services required per conception. In qualitative terms, this may be adopted as the only and foremost criterion/parameter for knowing/judging the performance of AI center/programme. A suitable user friendly reporting system may be devised/proposed so that the accurate/authentic success rates can be calculated easily.

## Chapter 1

### Introduction, Contextual Background and Sector History

#### 1.1 Introduction

**1.1.1** Artificial Insemination (AI) was the first assisted reproductive technique applied to control and improve reproduction as well as genetics. The first successful insemination was performed by the Italian physiologist and priest Abbe Lazzaro Spallanzani in 1784.

**1.1.2** AI being one of the most important reproductive technologies provides a powerful tool for livestock sector.

**1.1.3** The AI technology has revolutionized livestock productivity. As such no other technology in animal sciences has been so widely adopted globally as AI.

**1.1.4** The reproductive efficiency is the major factor affecting productivity and profitability of a dairy farmer. Hence, failure of reproduction can lead to great economic loss to the farmers.

**1.1.5** AI involves collection of semen from an elite male which is then transferred into sexually receptive female prior to ovulation or immediately after ovulation so that fertilization occurs/takes place. Before insemination of a naturally cycling, spontaneously ovulating female, the semen so collected is thoroughly evaluated and cryopreserved in Liquid Nitrogen (LN<sub>2</sub>). Thus, the livestock production efficiency will depend upon success of AI technique employed. However, this intervention or technology does come up with challenges which needs to be mastered through practice so that further opportunities open up. These new opportunities may further pose new challenges and so the cycle will go on.

#### 1.2 Bovine breeding-overall national scenario

**1.2.1** The overall cattle population in the country has shown a decline by 4.10% between the last two consecutive censuses (2007 & 2012). However, while there is a decline of 8.94% in case of indigenous cattle, the crossbred cattle population increased by 20.18%. Again, in case of crossbred cattle, male population has shown a decline of 12.75% while the female population has increased by 28.78%. In case of indigenous cattle

population, male population has shown a decline of 19.32% whereas female population has declined by just 0.01%. The above results/ analysis of cattle population as per 19<sup>th</sup> livestock census (2012), indicates preference for females over the males. Sex of calf is not usually determined during pregnancy and males are neglected only after their birth. The main reason for preference for females is economic considerations in terms of their ability to provide sustainable source of income through milk production. Since there is a shift in providing draught power for farming operations, i.e from bullock power to mechanical power, the farmers tend to neglect bullocks. Moreover, the farmers do not afford to maintain the bullocks and the trend is to use tractors and other machines for their farming operations mostly through custom hiring as majority of farmers who happen to be small holders do not afford to own the farm machinery. Further, the farmers in general find more economical to undertake farming operations through custom hiring of machineries rather than maintaining bullocks. Secondly, non-availability of labour for maintenance of bullocks in rural areas aggravates the problem further, where the farmers are unwilling to employ family labour. Hence, the national trend is to go for crossbred/ improved/ graded animals. As such, profits and profitability in milk production has been the driving force behind production of females having better/ improved productivity. With a view to achieving superior genetic traits in progeny, Artificial Insemination (AI) process is followed using semen of proven bulls.

**1.2.2** The livestock sector contributes around 25% of total agricultural GDP. For growth of this sector, the dairy animals need to be productive in its life term in order to yield maximum returns to the farmer. Hence, for enhancement of herd genetics, breeding programme needs to be implemented in a strategic manner. Although India has one of the largest breeding infrastructure in the world, the AI coverage in Bovine is hardly 25-30% of the breedable population.

**1.2.3** The country has set a national target of 50% AI coverage by the year 2021-22. The National Programme for Bovine Breeding (NPBB) launched in February 2015 focuses on (a). Field AI network, (b). Conservation of indigenous breeds and (c). Establishment of breeders' associations/societies to encourage conservation and development of indigenous breeds.

**1.2.4** For delivering the breeding inputs at doorstep, 5,000 AI technicians called MAITRI (which stands for Multi-purpose AI Technician in Rural India) are to be appointed/established.

**1.2.5** Thus under NPBB, the AI technician will be the nucleus as the programme will put in place the policy programme framework to transform breeding into an important activity.

### **1.3 Bovine breeding – Karnataka State scenario**

#### **1.3.1 Role of DAH&VS, GoK**

- Agriculture in Karnataka is still under the influence of traditional practices. Further, Agriculture in the rural parts of Karnataka is mainly dependent on Livestock. Benefits of improved Animal Husbandry and Agricultural activities and the results of such improved activities with the help of livestock are reaching more than 60% of the total population of the state which dwells in rural areas. The bigger sector of the rural population is mainly dependent upon Agriculture and Animal Husbandry for livelihood.
- The breeding infrastructure in Karnataka state is as under.
  - a. Three Frozen Semen Stations (FSS), one each at (a). State Livestock Breeding and Training Centre (SLB&TC), Hessarghatta; (b). Livestock Breeding Farm, i.e. State Semen Collection Centre (SSCC), Hessarghatta and (c). Livestock Breeding and Training Centre (LB&TC)/Centralized Semen Collection Centre (CSCC), Dharwad
  - b. Twelve livestock farms which produce breeding bulls (exotic, indigenous and crossbreds), improved heifers, fodder seeds apart from imparting practical training to farmers on modern Animal Husbandry practices and extension work. Out of these 12 farms, three are located at Hesaraghatta and the remaining nine are located at various places i.e. Dharwad, Kurikuppe, Munirabad, Koila, Kudige (Jersey), Tegur (Buffalo), Bankapura (Khillar), Kunikenahalli (Hallikar) and Ajjampura (Amrit Mahal).
- Artificial Insemination through the Veterinary institutions numbering 4212 spread throughout the state. One of the challenges the state faces under breeding sector has been to provide effective delivery system for adopting new and innovative technologies. The gaps / constraints identified under breeding sector have been – (1). Non-availability of bulls possessing high yield germplasm of milk and (2). Inadequate



infrastructure and extension facilities (DAH & VS, GoK, Annual Administrative Report 2014-15).

- The details of species-wise and breed-wise number of breeding bulls maintained at the three FSS are furnished in Table No. 1.

**Table 1: Species wise and breed wise number of breeding bulls maintained at the three FSS**

Species	Breed	SSCC		SL&BT		CSCC		Total	
		A	B	A	B	A	B	A	B
Exotic cattle	HF	18	0	12	8	6	6	36	32
	Jersey	12	0	19	18	9	9	40	39
	<b>Sub Total</b>	<b>30</b>	<b>0</b>	<b>31</b>	<b>26</b>	<b>15</b>	<b>15</b>	<b>76</b>	<b>71</b>
Indigenous	Hallikar	5	5	0	0	0	0	5	5
	A-Mahal	12	11	0	0	0	0	12	11
	Khillar	0	0	0	0	19	9	19	9
	Deoni	0	0	0	0	4	0	4	0
	<b>S. Total</b>	<b>17</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>23</b>	<b>9</b>	<b>40</b>	<b>25</b>
<b>Total Cattle</b>		<b>47</b>	<b>16</b>	<b>31</b>	<b>26</b>	<b>38</b>	<b>24</b>	<b>116</b>	<b>96</b>
Buffalo	Surti	0	0	11	0	21	15	31	15
	Murrah	0	0	35	27	71	26	106	53
	<b>Sub Total</b>	<b>0</b>	<b>0</b>	<b>46</b>	<b>27</b>	<b>92</b>	<b>41</b>	<b>138</b>	<b>68</b>
<b>Grand Total</b>		<b>47</b>	<b>16</b>	<b>77</b>	<b>53</b>	<b>130</b>	<b>65</b>	<b>254</b>	<b>164</b>
<b>Donating Semen</b>			<b>34%</b>	<b>-</b>	<b>69%</b>	<b>-</b>	<b>50%</b>	<b>-</b>	<b>65%</b>

**A : Total bulls maintained B : Donating bull out of the total bulls maintained.**

*Source: Annual administration Report 2014-15, DAH&VS, GoK*

- The field distribution of semen straws to districts during 2014-15 was as under:
  - Semen Bank, Hebbal 26,27,316
  - CSCC, Dharwad 9,70,313
  - LB&TC, Munirabad 1,98,500

**Total 37,96,129**

### 1.3.2KMF in Karnataka

- The Karnataka Milk Federation has in its fold 14 District Milk Unions spread over the entire state covering all the 30 districts (22,000 villages). KMF has 14,444 registered societies with total membership of 23,08,000 (around 160 members per society). As at the end of March 2015, KMF had 12,928 functional Dairy Cooperative Societies (DCS). The KMF's total milk procurement is around 65 lakh Kg. from about 22 lakh milk producer members (average 3Kg/member or 300Kg/village). The State produces 1.78 Crore liters of milk/day of which 37% is procured by KMF.

- The Nandini Sperm Station (NSS), Hessarghatta, an ISO 9001:2008 certified unit is the Federation's main and most important breeding infrastructure. The Central Monitoring Unit (CMU) of department of Animal Husbandry, Dairying and Fisheries (DAH & F), GoI has certified NSS as 'A' Grade Semen Station. The NSS produces semen doses from Holstein Friesian (H.F.), Jersey and Murrah bulls. The annual production of NSS is four million doses. The NSS is able to meet the requirement of over 3,500 AI Centers of milk unions all over the State.

### **1.3.3 Implementation of Breeding Programme through BIRD –K**

- The department of Animal Husbandry and Veterinary Services (AH & VS) Government of Karnataka (GOK), has been supporting BAIF Institute of Rural Development-Karnataka (BIRD-K) AI centers under the Centrally Sponsored Scheme (CSS). These centers help promote and facilitate Artificial Insemination (AI) using frozen semen of pedigree sires of cattle and Buffaloes. The services are provided at the doorstep of the farmers.
- BAIF DEVELOPMENT RESEARCH FOUNDATION has promoted a society in the State of Karnataka by the name 'BAIF Institute for Rural Development-Karnataka (BIRD-K)'. The department of (AH & VS), Government of Karnataka (GOK) entered into an agreement with the BIRD-K to promote and facilitate Artificial Insemination (AI) using frozen semen of pedigree sires of Cattle and Buffaloes. As per the agreement entered during the third quarter of the year 2010-11 (28.10.2010), BIRD-K commenced the process of establishment of centers during the last quarter of the said year (Jan 2011). These AI centers are to be operated for a continuous period of five years from the date of establishment of the center. BIRD-K has established 100 AI centres in nine districts of North Karnataka.
- In case of Government of Karnataka all the Veterinary Institutions viz. Veterinary hospitals, dispensaries, primary veterinary centers, mobile veterinary centers, Key Village Scheme Sub- centers etc. provide AI services along with health and other services (Annual administrative report 2014-15, DAH & VS, GoK).
- As per the agreement, BIRD-K has established 100 AI centers in nine districts of North Karnataka. The study area covered seven districts which have 83 centres in total. However, the sample for the study was drawn from 73 centres spread over 28 taluks. The details of districts-wise and taluk-wise no. of centers from these seven districts and the breedable bovine female population in the study districts are furnished in Table-2 & 3, respectively.
- BAIF's cattle development programme is spread over 14 states of the country, Karnataka being one of these states. The total AIs performed during the year 2014-15 in these 14 states were 39, 72,983 of which the share of Karnataka was 1, 78,079 (4.48%). The total confirmed pregnancies during the year 2014-15 in Karnataka were

118023 while the no. of female calves born were 17,501. In respect of AI done Karnataka ranked 6<sup>th</sup> amongst 14 states. With reference to AIs performed during 2014-15, the ranking of these states is as under 1. Uttar Pradesh, (41.89%) 2. Jharkhand (12.09%), 3. Rajasthan (10.26%), 4. Bihar (7.54%), 5. Maharashtra (6.09%), 6. Karnataka (4.48%), 7. Punjab (4.24%), 8. Gujarat (3.88%), 9. Madhya Pradesh (2.34%), 10. Telangana (2.32%), 11. Uttarakhand (2.23%), 12. Odisha (1.61%), 13 Andhra Pradesh (1.01%) and 14. Chattisgarh (0.01%). The position of Karnataka with respect to certain other parameters in comparison to total for the 14 states is as under:

- a. No. of districts covered in 14 states- 249 of which 15 districts in Karnataka (6.02%).
- b. No. of Centres opened in 14 states- 4195 of which 160 in Karnataka (3.81%).
- c. No. of villages covered in 14 states- 95565 of which 2588 in Karnataka (2.71%).
- d. Families covered in 14 states- 58, 92,045 of which 1, 11,174 in Karnataka (1.89%).
- e. Avg AIs/ centre in 14 states are 947. In Karnataka the average is 1113.
- f. Avg villages/centre in 14 states- 23. In Karnataka the average is 16.
- g. Avg families/centre in 14 states 1405. In Karnataka the average is 695.

**Table 2 : Details of AI Centres in the implementation area covered under the study**

Sl.No.	District	Taluks	AI centers	% to total
1	Kalaburgi	6	14	19
2	Yadgir	3	7	10
3	Ballari	5	20	27
4	Raichur	3	11	15
5	Vijayapura	5	5	7
6	Bagalkot	3	9	12
7	Gadag	3	7	10
	<b>Total</b>	<b>28</b>	<b>73</b>	<b>100</b>

**Table3: District wise number of breedable females (Bovine) as per 19th livestock census.**

Sl.No.	District	Cattle (breedable females)		Total breedable female Cattles	Buffalo females (over 3 years)	Total Bovine breedable females
		Exotic/cross breds(over 2.5 years)	Indigenous cattle (over 3 years)			
1	Kalaburgi	6259	153984	160243	50043	210286
2	Yadagiri	1099	115724	116823	42577	159400
3	Ballari	18849	104754	123603	82728	406331
4	Raichur	10943	122254	133197	76137	209334
5	Vijayapura	2756	87086	89842	91259	181101
6	Bagalakote	16108	87598	103706	135931	239637
7	Gadag	14328	34117	49445	35548	84993
	<b>Total</b>	<b>70342</b>	<b>706517</b>	<b>776859</b>	<b>514223</b>	<b>1291082</b>
	<b>% to total</b>	<b>5.45</b>	<b>54.72</b>	<b>60.17</b>	<b>39.83</b>	<b>100.00</b>

The details of breed wise and district wise AI done during the year 2014-15 by DAH & VS are furnished in Table No.4

**Table 4: Breed-wise and district-wise AI done during 2014-15 by DAH&VS**

Sl. No.	District	Cattle (Exotic, CB and Indigenous)			Buffaloes	Others	Grand Total
		Exotic & CB	Indigenous	Total			
1	Kalaburgi	1987	1472	3459	2393	939	6791
2	Yadagiri	394	2297	2691	4931	385	8007
3	Ballari	16421	3751	20172	23611	1716	45499
4	Raichur	3425	2680	6105	4959	1931	12995
5	Vijayapura	2940	13860	16800	15497	874	33171
6	Bagalakote	28447	30009	58456	45123	7666	111245
7	Gadag	9796	6203	15999	4998	2791	23788
<b>Total(7 Districts)</b>		<b>63410</b>	<b>60272</b>	<b>123682</b>	<b>101512</b>	<b>16302</b>	<b>241496</b>
<b>% Share(7 Dist)</b>		<b>26</b>	<b>25</b>	<b>51</b>	<b>42</b>	<b>7</b>	<b>100</b>
<b>State Total (30 Dist)</b>		<b>1825916</b>	<b>355255</b>	<b>2181171</b>	<b>503061</b>	<b>161269</b>	<b>2845501</b>
<b>% Share (30 Dist)</b>		<b>64</b>	<b>12</b>	<b>76</b>	<b>18</b>	<b>6</b>	<b>100</b>

*Source: Annual administration Report 2014-15, DAH&VS, GoK.*

In case of exotic / crossbred females, the coverage through AI is higher as compared indigenous cows. For example, in case of Vijayapura the number of AI per female works out to little over one (less than 1.1) which indicates that 40% of cross bred / exotic cows have been covered through AI, assuming that on an average 2.7 AIs are required per animal per year. In case of Bagalkote the situation is better. In Bagalkote the number of AI per female is comparatively higher at 1.8. Which indicates that around 66% of cross bred / exotic cows may have been covered through AI. In remaining five districts, on an average less than one AI is received per breedable female even in case of exotic/crossbreds.

## Chapter 2

### Objectives and Purpose of the Programme

#### 2.1 Programme Objectives

Government of Karnataka (GOK) has accorded top priority for rural development with particular focus on removal of unemployment within a certain time framework. Implementation of milk production programme has been one of the important components of rural development for raising the income levels of underprivileged sections of the rural society, in particular. The main plank of milk production programme has been up-gradation of non-descript cattle and buffaloes along with conservation of indigenous breeds of cattle and buffaloes. In case of cows, besides up-gradation, the option of crossbreeding with exotic dairy breeds of cattle is available while in case of buffaloes up-grading the non-descript buffaloes with recognized indigenous breeds of buffaloes (Murrah and Surti) is the only option available. In this connection, the GOK decided to involve voluntary agencies of standing and repute in the programme of rural development, BIRD-K being such an organization.

#### 2.2 Implementation of Breeding Programme through BIRD-K

The department of Animal Husbandry and Veterinary Services (AH &VS) Government of Karnataka (GOK), has been supporting BAIF Institute of Rural Development-Karnataka (BIRD-K) AI centers under the Centrally Sponsored Scheme (CSS). These centers help promote and facilitate Artificial Insemination (AI) using frozen semen of pedigree sires of cattle and Buffaloes.

##### 2.2.1 AI Centres of BAIF Institute for Rural Development (BIRD-K)

BAIF DEVELOPMENT RESEARCH FOUNDATION has promoted a society in the State of Karnataka by the name 'BAIF Institute for Rural Development-Karnataka (BIRD-K)'. As mentioned above, the department of (AH &VS), Government of Karnataka (GOK) entered into an agreement with the BIRD-K to promote and facilitate Artificial Insemination (AI) using frozen semen of pedigree sires of Cattle and Buffaloes. As per the agreement, BIRD has established 73 AI centres in seven districts of Karnataka. They need to operate the aforesaid Centers for a continuous period of five years from the date of establishment of the Center.

With reference to physical presence of BIRD Centers vis-à-vis DAH & VS Centers in the seven districts under study, BIRD-K has an impressive share in the AIs performed. The details about district-wise number of AI centers established by BIRD-K vis-à-vis the number of Veterinary Institutions, of Government of Karnataka as also performance of these AI Centers during 2014-15 and share of BIRD-K etc. are furnished in Table-5.

**Table 5 : BIRD-K AI Centres vis-à-vis Veterinary Institutions of GoK and AIs performed**

Sl.NO.	District	No. of AI Centers			No. of AIs performed			BIRD Share (%)	
		BIRD	GOK	Total	BIRD-K	GoK	Total	Centers	AIs
1	Kalaburgi	14	214	228	7461	6791	14252	6	52
2	Yadgir	7	101	108	4295	8007	12302	6	35
3	Ballari	20	125	145	17208	45499	75009	14	23
4	Raichur	21**	106	127	14882	12995	27817	17	12
5	Vijayapur	5	144	149	4731	33171	37902	3	12
6	Bagalkot	9	144	153	12311	111245	123556	6	10
7	Gadag	7	88	95	6478	23788	30266	7	21
<b>A</b>	<b>Sub total</b>	<b>83**</b>	<b>922</b>	<b>1005</b>	<b>67306</b>	<b>241496</b>	<b>308802</b>	<b>8</b>	<b>22</b>
8	Bidar	7	114	121	7143	24597	31680	6	23
9	Koppal	10	84	94	11533	50552	62085	11	19
<b>B</b>	<b>Sub total</b>	<b>17</b>	<b>198</b>	<b>215</b>	<b>18676</b>	<b>75089</b>	<b>93765</b>	<b>8</b>	<b>20</b>
<b>C</b>	<b>Grand total</b>	<b>100</b>	<b>1120</b>	<b>1220</b>	<b>85982</b>	<b>316585</b>	<b>402567</b>	<b>8</b>	<b>21</b>

\*\* N.B- As per the data received from BIRD-K, Raichur district has got 21 AI centres established by BIRD-K, but as per the RFP document, only 11 centres are factored in under this district. The BIRD-K centres established in Sindhanur and Lingasugur taluk of Raichur district did not find a place in the list. Hence for the limited purpose of this study, only 73 BIRD-K AI centres have been considered.

In case of Government of Karnataka, besides AI centers, AI services are also provided by other State Government Veterinary Institutes Viz., Veterinary hospitals, dispensaries, primary veterinary centers, mobile veterinary centers, Key Village Scheme Sub- centers etc.

## 2.3 Evaluation of the Programme

**2.3.1** The evaluation study was commissioned with the following objectives:

- To evaluate as to whether the amount provided under the scheme was utilized by BIRD-K for the purpose and objectives laid down in the scheme and MoU.
- Whether there is need for continuation of the scheme in the present form?
- To compare the performance of BIRD-K centers with the AH Dept. and KMF centers, respectively.

2.3.2 The evaluation study covered the following aspects:

**(A) About AI centers, semen source and charges:**

1. Details of qualification and experience of staff and equipment provided by BIRD-K at each Artificial Insemination (AI) center.
2. Arrangement and frequency of Liquid Nitrogen made by BIRD-K
3. Source of semen and quality certification process for semen.
4. Frequency, eventuality at/after which the quality of semen in AI centers tested and the results therein.
5. District wise breeds of cattle/buffaloes whose semen was used in AI and its conformation with Breeding Policy of Government of Karnataka?
6. Charges for AI that is collected by BIRD-K from farmers and deposited to the Government.

**(B) Analyses of achievements:**

7. The conception to AI service (excluding repeat service) ratio/ percentage achieved by the AI centers. Statistical difference in the center to center or district to district (conception to AI service ratio/percentage to be calculated for district as a whole too). The reasons for this difference.
8. The calving to conception ratio/ percentage achieved by the AI centers. Statistical difference in the center to center or district to district (calving to conception ratio/percentage to be calculated for district as a whole too). The reasons for this difference
9. Comparison of district wise conception to AI and calving to conception ratio/ percentage. Comparison within the state. The reasons for the difference in these ratios.
10. A perusal of achievements reveals that of the nine districts where the scheme is operational, Bagalkot has consistently and significantly been at the top, whereas Gulbarga has consistently and significantly been at the bottom. The reason may be given for this. Steps to be taken to increase achievement of Gulbarga

**(C) Role of BIRD and Government:**

11. Monthly report submission about conceptions and calves born, to the Deputy Directors of the districts.
12. Verification of 10% of the conceptions and calves born by district Deputy Directors. Difference observed in reporting by Deputy Directors and BIRD-K.
13. Frequency of meeting of District Level Review Committees and reporting of any findings to the State Level Review Committee.
14. Frequency of meeting of State Level Review Committee.

**(D) Residual Matters:**

15. Comparison of BIRD-K AI centers under evaluation with AI centers of Government of Karnataka and that of KMF
16. The actual per service cost incurred (including establishment, salaries and maintenance) by the department, KMF and BIRD-K AI centres. Total cost recovered from cow/buffalo owners using their services.
17. Opinion of the farmers having utilized the services of BIRD AI centers under this scheme about the timelines and quality of services provided to them.
18. Continuation of the scheme. Suggestions for improving the scheme.

19. Efforts made by DAH&VS, KMF and BIRD-K AI centres and the chance of overlap therein (the same animal being serviced by efforts of department, KMF and BIRD in the same season).  
Ways to prevent the overlap.
20. Methodology of calculation of success rate for conception (confirmed pregnancy) to service and bench mark figures for conception to AI service.



## Chapter 3

### Review of literature/Past Evaluation reports

Artificial insemination is the technique in which semen with living sperms is collected from the male and introduced into female reproductive tract at proper time with the help of instruments. This has been found to result in a normal offspring. The first scientific research in artificial insemination of domestic animals was performed on dogs in 1780 by the Italian scientist, Lazanno Spalbanzani. His experiments proved that the fertilizing power reside in the spermatozoa and not in the liquid portion of semen.

#### 3.1 Artificial insemination in Cattle:

Artificial insemination is not merely a novel method of bringing about impregnation in females. Instead,

##### Advantages of Artificial insemination

- There is no need of maintenance of breeding bull for a herd; hence the cost of maintenance of breeding bull is saved.
- It prevents the spread of certain diseases and sterility due to genital diseases.eg. Contagious abortion, vibriosis.
- By regular examination of semen after collection and frequent checking on fertility early detection of inferior males can be made and better breeding efficiency is ensured.
- The progeny testing can be done at an early age.
- The semen of a desired sire can be used even after the death of that particular sire.
- Wide geographical reach for the semen.
- It makes possible the mating of animals with great differences in size without injury to either of the animal.
- It is helpful to inseminate the animals that refuse to stand or accept the male at the time of oestrus.
- It helps in maintaining the accurate breeding and calving records.
- It increases the rate of conception.
- It helps in better record keeping.

it is a powerful tool mostly employed for livestock improvement. In artificial insemination the germplasm of the bulls of superior quality can be effectively utilized with the least regard for their location in faraway places. By adoption of artificial insemination, there would be considerable reduction in both genital and non-genital diseases in the farm stock.

The discovery that bull semen could be successfully frozen and stored for indefinite periods has revolutionized AI in cattle. In 1949, British scientists discovered that addition of glycerol to the semen extender improved resistance of sperm to freezing. Glycerol acts to remove water from the sperm cell prior to freezing and prevents the formation of cellular ice crystals which would damage the sperm. When semen is stored in Liquid Nitrogen (LN<sub>2</sub>), at -196<sup>0</sup>C, no deterioration in fertility is observed. Frozen semen can be stored indefinitely if proper temperature is maintained. A recent report told of a calf born from frozen semen stored for 16 years. Artificial coloring is frequently added to semen extenders in order to distinguish one breed from another.

India is having one the largest breeding infrastructure in the world. In spite of this, the coverage Artificial Insemination (AI) in Bovines is hardly 25-30% of the breedable population of the country. The semen production must reach to 140 million doses to achieve national target of 50% of AI coverage by 2021-22 (A Kumaresan and T K Mohanty<sup>1</sup>).

The crossbreeding of non-descript zebu cows with semen of exotic dairy cattle breeds has resulted in enhancing milk production by 5 to 8 times to that of nondescript cows, reducing age at first calving and shortening calving intervals in first generation crossbred progenies. To sustain the improved productivity of crossbreds and to control the decline in performance in subsequent generations therefore, requires a well breeding policy along with availability of progeny tested high quality breeding bulls in sufficient numbers, infrastructure on Artificial Insemination and animal health, improved feeding and management practices, door to door delivery of veterinary and extension services, programme monitoring and regulatory mechanisms necessary to obtain higher milk production(2015, Rajesh Wakchaure et.al<sup>2</sup>)

### 3.2 Fertility in cattle:

Fertility in cattle is affected by environmental, genetic, disease and management factors. These influence the reproductive process at ovulation, fertilization or implantation or during gestation and parturition. The commonest estimate of fertility rate is the percentage of mated or inseminated cows that become pregnant (pregnancy rate) or finally calve (calving rate). However, fertility can also be expressed in other ways. For example, *Singh and Sharma (1984)*<sup>3</sup> referred to two measures of fertility: a general fertility rate, which is the ratio of calves born to females of breeding age, expressed as a percentage; and a specific fertility rate, which measures the number of births within a given group or the total fertility rates of females over their reproductive life. Net reproductive rate was given as the extent to which the female calves of one generation survive to reproduce themselves as they pass through calf-bearing age, expressed as the number of female calves that survive per 100 females of breeding age.

Fertility rates can also be estimated prior to calving as the percentage non-return rate. This is the number of cows bred that do not come back in heat and are thus assumed to have conceived. This value may be derived at 60, 90, 120, 145 or 200 days after mating (McDowell et al, 1976)<sup>4</sup>. Where artificial insemination is employed, fertility rates can be expressed as the number of calves born per 100 inseminations (Macfarlane and Goodchild, 1973)<sup>5</sup>. Progesterone assay now makes it possible to determine conception rates as early as 21 days after breeding. It is also ideal for estimating the magnitude of early embryonic losses.

### 3.3 Developmentally backward taluks in Karnataka

Pre-independent Karnataka was divided mainly in to three parts, viz. Mysore princely state, Bombay Karnataka and Hyderabad Karnataka. Out of the 175 taluks in Karnataka, Dr. Nanjundappa committee found about two third taluks as backward taluks. The committee further categorized the backward taluks into three groups namely, most backward taluks, more backward taluks and backward taluks. The committee made a number of recommendations for the reduction of regional imbalances in the state. The committee using 35 indicators for different sectors has constructed five indices. Incorporating all these indices, one final index has been constructed and it has been named as Comprehensive Composite Development Index (CCDI). Further 20%

additional weight has been given to social sector. The committee has worked out taluk wise CCDI. In taluks where aggregate indicator is less than unity, the same is assumed as below the state average in terms of relative development and referred to as backward (Shiddalingaswami V Hanagodimath, August 2014)<sup>6</sup>.

### 3.4 BAIF's Cattle Development Centres

Based on the geographical distribution of breedable cattle and buffaloes, network of roads and communication and milk marketing, the cattle development centre is established, covering a radius of 10-15 km, with over 1000-1500 families and about 1500-2000 breedable cattle and buffaloes. Each centre is managed by a trained Block Programme Officer (BPO) who is expected to initiate socio-economic development activities, apart from providing cattle breeding services. Local youth are also trained in AI, PD, vaccination and management of milch animals with a view to encourage them to serve as AI technicians in their locality. In fact, this effort has paid a rich dividend by promoting self-employed Livestock Breeders in rural areas. These youth, holding a Diploma or Degree in Agriculture or Animal Science are trained and supported by BAIF to manage the cattle breeding centres. They have taken equipment, accessories and motorcycles on lease and operate the centre under the banner of BAIF, which provides the inputs such as liquid nitrogen, frozen semen, extension literature, mineral mixture, vaccines, antigens, etc. on credit. These technicians collect their fees for various services rendered to the farmers, either directly from the cattle owners or from the affiliated milk or sugar cooperatives. To support the cattle development programme in the field with superior quality inputs, BAIF has established a Bull Mother Farm and Bull Station at the Central Research Station, Urulikanchan. This farm houses Jersey and Holstein Friesian cows and bulls of both exotic and native breeds. The Semen Freezing Laboratory is equipped with basic amenities to freeze over two million doses of semen annually. (Dr N G Hegde, BAIF<sup>7</sup>)

Overall achievement by BAIF promoted centres during 2014-15 are 3972983 AIs with conception rate of 55.96% on physical examination. The semen freezing laboratory at Uruli Kanchan accredited by Government of India under "A" category has produced 73.99 lakh doses and Jind Goshala lab has produced 14.21 lakh doses of semen. 46% of the semen produced was used in BAIF programme while the rest was sold. The Central Cattle Breeding Farm, BAIF, Uruli Kanchan houses 436 males and 273 female cattle and buffaloes of high genetic merit as breeding stock. The semen freezing laboratory produced 73.99 lakh semen doses from 254 elite bulls of pure Holstein and Jersey and their crosses, indigenous breeds of cattle such as Gir, Sahiwal, Khillar, Tharparkar, Khillar, Amrut Mahal, Hallikar, Dangi, Ongole, Krishna Valley, Red Kandhari and Gangatiri and buffaloes of Murrah, Surti, Jafrabadi, Banni, Pandharpuri and Bhadavari breeds. The semen lab established by BAIF at Jind, Haryana in 2011, produced 14.21 lakh doses of semen from 42 elite bulls of Sahiwal, Red Sindhi, Harayana, Tharparkar and Gir breeds (BAIF Annual report 2014-15). The State wise performance of Cattle Development Programme is furnished in Table No. 6.

**Table 6: State-wise performance of BAIF Centers under Cattle Development Programme**

Sl No.	States	Districts	Centres	Villages (cumulative)	Families (cumulative)	Total inseminations (2014-15)
1	Maharashtra	19	252	3458	61214	242122
2	Gujarat	23	229	1858	264666	154092

3	Karnataka	15	160	2588	111174	178079
4	Rajasthan	19	434	7812	237728	407616
5	Uttar Pradesh	75	1236	42390	3215668	1664265
6	Uttarakhand	9	108	3265	269639	88728
7	Bihar	14	246	5459	393243	299454
8	Jharkhand	24	1010	21387	914998	480496
9	Madhya Pradesh	21	174	2530	86177	92822
10	Chhattisgarh	1	1	27	619	565
11	Telangana	7	98	1483	79390	92060
12	Andhra Pradesh	4	47	575	43058	40014
13	Odisha	10	100	1920	85764	64045
14	Punjab	8	100	813	128707	168625
	<b>Total</b>	<b>249</b>	<b>4195</b>	<b>95565</b>	<b>5892045</b>	<b>3972983</b>

3.5BIRD K: The Cattle Development Programme supported by Government of Karnataka and farmers' cooperatives, operated through 160 centres, is providing service to 111,174 families spread over 2588 villages in 15 districts. The activities included AI, PD, deworming, vaccination, animal health camps and calf rallies. During the year, 178079 AI were performed, 118023 pregnancies were confirmed and 17501 female calves were born. (BAIF Annual report 2014-15)

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## Chapter 4

### Log frame / Theory of Change / Basis for Government intervention

4.1 The Department of Animal Husbandry & veterinary Services (DAH&VS), GoK entered into an agreement with the BIRD (BAIF Institute for Rural Development), Karnataka to promote and facilitate Artificial Insemination (AI) using frozen semen of pedigree sires of Cattle and Buffaloes. As per the agreement BIRD has established 73 AI centres in seven districts of Karnataka. These districts are (i) Kalburgi, (ii) Yadgir, (iii) Ballari, (iv) Raichir, (V) Vijayapura, (6) Bagalkote, and (7) Gadag.

4.2. The purpose of evaluation is to evaluate as to whether the amount provided is utilized by the BIRD, Karnataka, for the purposes and objectives laid down in the scheme and MOU and whether there is need for continuation of the scheme in the present form. An additional point to be evaluated is to compare the performance of BIRD with the AI centres managed by Animal Husbandry Department and KMF.

4.3. Cattle and Buffaloes form a very important part of rural economy. As per the 19th Cattle census, between 2007 and 2012, overall cattle population in the country has shown a decline of 4.10%, the decline being 8.94% in case of indigenous cattle but an increase of 20.18% in case of Cross Bred(CB) cattle. In CB cattle too, male population has shown a decline of 12.75% but female population has registered an increase of 28.78%. In indigenous cattle male population has shown a decline of 19.32% whereas female population has declined by just 0.01%. Obviously then, the national trend is to go for improved variety/CB cattle mainly as a replacement of poor performing indigenous cattle; with more emphasis on the female population than males. Farm mechanization seems to be reducing the demand and utility of male cattle. Profits and profitability in milk production appears to be the driving force behind having better productivity female cattle. Artificial insemination done using semen of bulls/male buffaloes of proven superior genetic traits, which results in better progeny of known qualities thus has a very great demand.

4.4 BIRD, Karnataka being an agency involved in promoting successful crossbreeding through its AI centres located in seven district of Karnataka, the interventions planned by BIRD-K appear to be most realistic as also feasible and theory of change can be used very well besides other approaches. The efforts of BIRD, Karnataka backed by project budget approved by GoK will influence change and the program will lead to results. This is the general purpose of both log frame and theory of change.

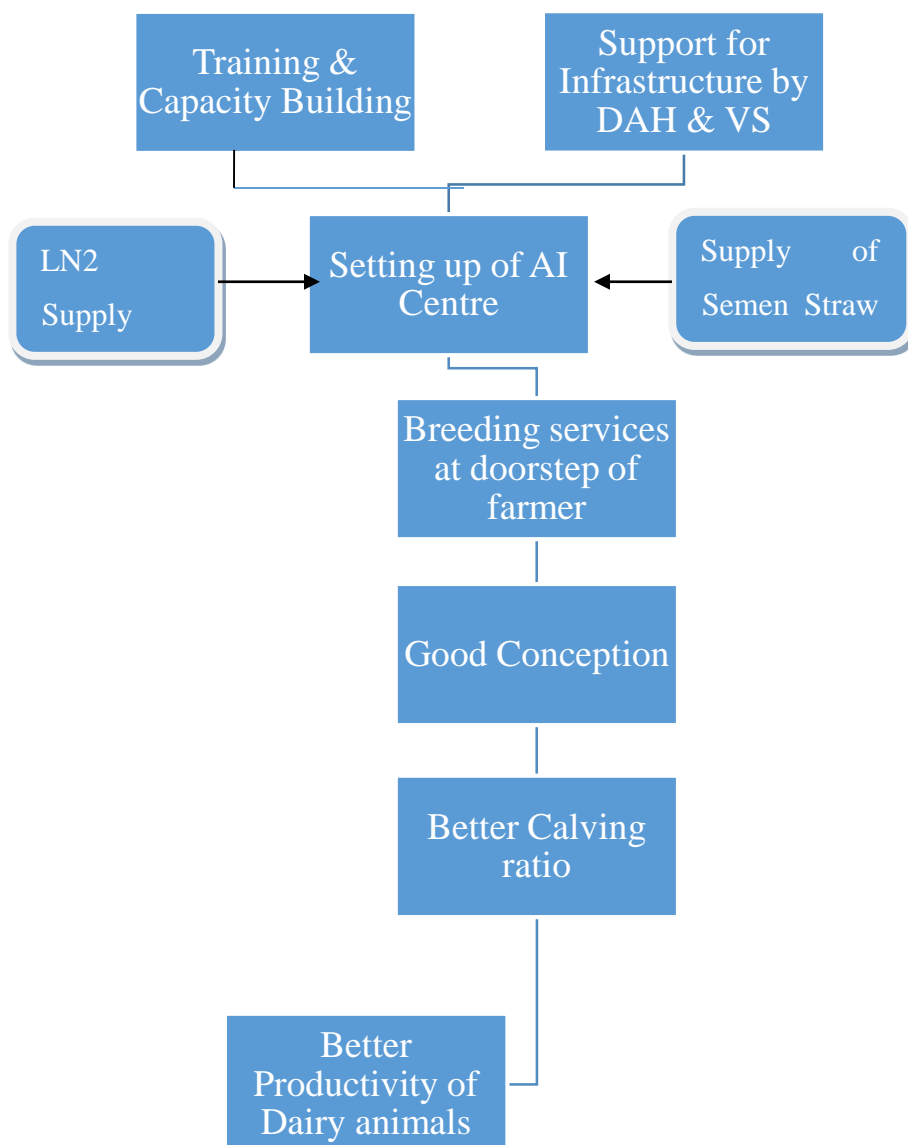
4.5 The tasks vis-à-vis activities to be performed to produce the desired output / results are furnished in Table No: 7

**Table 7: Broad Logical framework under setting up of 73 AI centres by BIRD, Karnataka**

<b>S No</b>	<b>Inputs</b>	<b>Tasks- activities</b>	<b>Output</b>
1	Specified coverage	Setting up of AI centres	Providing breeding services.
2	BIRD-K AI Centres	No overlap with KMF, DAH&VS Centres	Breeding services in remote areas
3	Exclusive staff	Staff deployment	Staff in position
4	Skill upgradation	Various trainings	Better breeding services
5	Trained and experienced staff	Professional AI services	Better conception ratio
6	Professional AI technicians	Post pregnancy follow up	Better calving to conception ratio
7	BIRD K Breeding services	Ancillary services- first aid, feed supply, etc.	Model centres
8	Support for infrastructure by DAH&VS	Fixed remuneration to DAH&VS	Quality services for dairy farmers
9	Usage of breed specific semen	Maintenance of dam records	Conformity to cattle breeding policy of the state
10	LN2 supply	Regular measuring of LN2 level	Better semen straw quality
11	MIS and monitoring by DAH&VS	Regular monitoring by DAH&VS	Better service delivery

4.6 The purpose/goal of programme is to evaluate whether the amount provided under the scheme was utilized by BIRD-K for the purpose and objectives laid down in the scheme and MoA. In case there was proper utilization then it is imperative that the scheme continues so that benefit from the scheme can be made available to areas where there is no outreach of AI services provided by DAH&VS and KMF. The project has made required provision for carrying out the activities needed for achieving the goal. A broad structure of logical frame work describing sequence of interventions that lead to a particular desired outcome is represented below with the help of flow chart by starting at the top and using information from the objectives.

## Logical Framework





## Chapter 5

### Progress Review

5.1 The budget provided for setting up of 73 AI centres in seven districts of Karnataka is Rs. 11.42 crore, out of which Rs. 5395 crore has been released by GoK. The target of 2.79 lakh AI ws set and the achievement is 2.25 AIs. The target set for conceptions (confirmed pregnancies) was 1.11 lakh and the achievement is 0.99 lakh. Calving since inception of the programme is 4773 (males 24060 and females 23713).

The aggregate establishment cost incurred by the BIRD-K against the 28 centres is Rs 70, 35,532. The average per centre cost works out to Rs 2, 51, 269. During the course of the study 238 beneficiary farmers of BIRD-K from 28 AI centres located in seven districts were interviewed and their feedback is obtained through a semi structured questionnaire

The department of Animal Husbandry and Veterinary Services (AH &VS) Government of Karnataka (GOK), has been supporting BAIF Institute of Rural Development-Karnataka (BIRD-K) AI centers under the Centrally Sponsored Scheme (CSS). These centers help promote and facilitate Artificial Insemination (AI) using frozen semen of pedigree sires of cattle and Buffaloes. The services are provided at the doorstep of the farmers.

As per the agreement, BIRD-K has established 100 AI centers in nine districts of North Karnataka. The study area covered seven districts which have 83 centres in total. However, the sample for the study was drawn from 73 centres spread over 28 taluks.

During 2014-15 total AIs performed in Karnataka through BIRD K AI Centres was 1, 78,079. The total confirmed pregnancies were 118023 while the no. of female calves born were 17,501. In respect of AI done Karnataka ranked 6<sup>th</sup> amongst 14 states. The position of Karnataka with respect to performance of AI Centres is as under:

- a. No. of districts covered are 15 districts
- b. No. of Centres opened : 160 in Karnataka (including 100 Centres supported by DAH&VS under the present scheme)
- c. No. of villages covered :2588
- d. Families covered : 1, 11,174
- e. Avg AIs/ centre: 1113.
- f. Avg villages/centre: 16.
- g. Avg families/centre: 695.

Although performance of AI Centres of BIRD-K, KMF and DAH&VS have been studied extensively during the study, the overall comparison of the these Centres and ranking of the same based on performance may not be realistic as the three agencies have different primary objectives, strengths and weaknesses. DAH&VS has wide horizon of activities which also cover a small portion on AI and KMF has also other main objectives of increasing milk production and giving dairy farmers a remunerative price. However an attempt has been made to give salient aspect of the AI services provided by all the three agencies in the state.

## **5.2. Comparative performance of AI Centers (BIRD-K, KMF and DAH&VS)**

**5.2.1** Considering various factors given in the subsequent / relevant paragraphs of the report, it can be mentioned that the quality of services viz. timeliness and doorstep delivery in case of BIRD-K centers are found to be better than the centers operated by KMF and DAH&VS. However, as regards the end result of the service, the farmers interviewed reported that the no. of services required per conception did not exceed two AIs per conception in most of the cases, where the services were sought from all the three agencies. Item No. 4 of the Interview schedule for farmers seeks to obtain perceptions of the farmers. During the study 384 farmers were interviewed and their response was obtained which indicates that the farmers have good opinion about the timeliness and quality of services provided to them. Stakeholders have recognised the need for such a kind of service and have expressed that the service should continue. The services rendered by BIRD K have received good acceptance among the farmers due to quality, promptness and doorstep delivery of the same. The farmers have indicated that they are benefitted through the service.

**5.2.2** During the year 2014-15, the average number AI performed per center in case of BIRD K worked out to 811 as against 262 AIs performed by DAH & VS centers. Further, as regards confirmed pregnancies and calves born the figures are 360 pregnancies and 213 calves born per center in case of BIRD K as against 90 pregnancies and 61 calves born per center in case of DAH& VS centers. The district-wise position with regard to AI performance, confirmed pregnancies and calvings is furnished in Table No. 8.

**Table 8: District-wise performance of AI performed by BIRD-K and DAH & VS Centres**

District/Agency	No. of centers	AI performed		Conceptions		Calvings	
		Total	Per center	Total	Per center	Total	Per center
<b>Kalaburgi</b>							
BIRD-K	14	7461	533	3141	224	1365	98
DAH&VS	214	6791	32	2511	12	1523	7
<b>Yadagiri</b>							
BIRD-K	7	4295	614	2306	329	1418	203
DAH&VS	101	8007	79	3161	31	2422	24
<b>Ballari</b>							
BIRD-K	20	17208	860	7773	125	4642	232
DAH&VS	125	45499	364	16531	132	8794	70
<b>Raichur</b>							
BIRD-K	21	14822	706	6245	297	3401	162
DAH&VS	1066	12995	123	4608	43	2726	26
<b>Vijayapura</b>							
BIRD-K	5	4731	946	2147	429	1520	304
DAH&VS	144	33171	230	12628	88	9026	63
BIRD-K	9	12311	1368	5168	574	3300	367
DAH&VS	144	111245	773	36275	252	26057	181
<b>Gadag</b>							
BIRD-K	7	6478	925	3128	88	2037	291
DAH&VS	88	23788	270	7362	84	5993	68
<b>Total</b>							
<b>BIRD-K</b>	<b>83</b>	<b>67306</b>	<b>811</b>	<b>29908</b>	<b>360</b>	<b>17683</b>	<b>213</b>
<b>DAH&amp;VS</b>	<b>922</b>	<b>241496</b>	<b>262</b>	<b>83076</b>	<b>90</b>	<b>56547</b>	<b>61</b>

5.2.3 In case of four KMF centers where data were available, AIs performed, confirmed pregnancies and calvings per center during the year 2014-15 were 639 AIs, 303 pregnancies and 227 calvings, respectively. The details are furnished in Table No. 9.

**Table 9: Achievements of KMF centers (AIs performed, confirmed pregnancies and calvings)**

Sl. No.	Districts	Center	AI performed	Pregnancies	Calvings
1	Kalaburgi	Pattan	550	250	155
2	Vijayapura	Takkalike	928	472	371
3	Bagalakote	chikkalgundi	609	285	312
4	Gadag	Kanavi	468	205	70
	<b>Total</b>		<b>2555</b>	<b>1212</b>	<b>908</b>
	<b>Average per center</b>		<b>639</b>	<b>303</b>	<b>227</b>

**5.2.4**The private commercial AI centers reported annual insemination between 1800 to 2100 and confirmed pregnancies between 840 to 960

**5.2.5**In absence of availability of sufficient quantitative and qualitative data particularly in respect of DAH&VS and KMF on various performance indicators pertaining to the different agencies, it is rather difficult to arrive at a conclusive opinion about their comparative performance. In case of DAH&VS and KMF in fact, the team has to mainly depend on quantitative data. Hence, the ranking needs to be done taking into account certain factors indicated below:

- a. Locations of the centers, geographical and environmental factors.
- b. Availability of breedable female population in the area of operation.
- c. Scope/opportunities which exists in the area for earning livelihood vis-à-vis dependence or otherwise of the farmers on dairy farming as a source of supplementary/subsistence income.
- d. General awareness amongst the farmers about management and nutrition of the animals.
- e. Ability to provide doorstep service and its promptness vis-à-vis difficulties in this regard.
- f. Creation of goodwill/general awareness and visible impact in the operational area.
- g. Efforts towards provision of AI+ services through extension and related activities.
- h. Affording the farmers/state government wider choice for selection of the most important AI input i.e. semen and thereby helping/supplementing the efforts of State Government to implement breeding policy to achieve the desired results.

**5.2.6**Although there is locational disadvantage /their area of operation being limited to backward (most, more) areas, the quantitative performance of BIRD-K centers is better than DAH&VS centers as the centers are dedicated to AI work.

**5.2.7** As regards quality aspects, the BIRD-K has achieved on an average (4 years' average - 2011-12 to 2014-15) 2.35 AIs per conception. The performance of KMF and DAH&VS

centers as also that of private AI workers was found to be good.(2.11 and 2.30 AIs per conception). However, the performance arrived at in respect of the latter agencies is not backed by authentic data and is derived/developed on the basis of farmers' perceptions.

**5.2.8** The BIRD-K centers provide doorstep services with promptness. The DAH&VS centers face certain bottlenecks like non-availability of frozen semen carriers and vehicles for mobility. The DAH&VS centers also face staff constraints.

**5.2.9** The BIRD-K centers can operate in area where doorstep delivery of AI services may not be possible through DAH&VS and KMF centers. The KMF centers opt to operate in milk shed areas/villages, covered by a particular co-operative milk society. The KMF centers are under the control and management of cooperative societies. The AI worker of KMF center is staff of the society. He/She is required to give priority for milk procurement/society's work during certain time period of the day. He/She has to struggle for time management to ensure that both the tasks of timely AI service and milk procurement are handled with promptness.

**5.2.10** The KMF and private AI centers choose the villages/areas having comparatively higher availability of breedable female population as also better awareness amongst the farmers about management and nutrition aspects of animals.

**5.2.11** The BIRD-K centers have made visible impact in remote villages and earned desired goodwill. The BIRD-K center may prove to be a successful model and need to be taken forward for equitable distribution of benefits of livestock development. The present existence of BIRD-K centers covering five year period appears to be rather short and as such their long term involvement (say not less than 10 years) may be essential.

**5.2.12** The BIRD-K centers can prove to be a nucleus of live stock development in the villages where DAH&VS Centres are not present and can be entrusted with AI+ services such as first aid, de-worming, fodder development activities, mineral mixtures supplementation, formation of breeders' association, etc. At present BIRD-K centers are undertaking various extension activities in a rather sporadic manner. There is a need to streamline the process so that all the relevant aspects of extension activities are covered in a uniform and balanced way.

### **5.3. DAH&VS AI Centres:**

**5.3.1.**DAH&VS is involved in providing AI Services through the Veterinary institutions numbering 4212 spread throughout the state. Although there are 388 exclusive AI Centres, other services like providing treatment and extension services to a limited scale are also carried out by these centres.

**5.3.2.**One of the challenges the state faces under breeding sector has been to provide effective delivery system for adopting new and innovative technologies. The gaps / constraints identified under breeding sector have been – (1). Non-availability of bulls possessing high yield germplasm of milk and(2). Inadequate infrastructure and extension facilities (DAH & VS, GoK, Annual Administrative Report 2014-15).

### **5.4. KMF AI Centres:**

**5.4.1.**KMF is providing AI services through 3500 AI Centres in the State. However these AI Centres cater mainly to the farmers in the Cooperative fold and the farmers who are on the milk routes. The Secretary or AI worker attached to the village level Milk Producers Cooperative Society (MPCS) is engaged in overall management of the MPCS in addition to carrying out Artificial Inseminations.

**5.4.2.**The Karnataka Milk Federation has in its fold 14 District Milk Unions spread over the entire state covering all the 30 districts (22,000 villages). KMF has 14,444 registered societies with total membership of 23, 08,000 (around 160 members per society). As at the end of March 2015, KMF had 12,928 functional Dairy Cooperative Societies (DCS). The KMF's total milk procurement is around 65 lakh Kg. from about 22 lakh milk producer members (average 3Kg/member or 300Kg/village). The State produces 1.78 Crore liters of milk/day of which 37% is procured by KMF.

**5.4.3.**The Nandini Sperm Station (NSS), Hessarghatta, an ISO 9001:2008 certified unit is the Federation's main and most important breeding infrastructure. The Central Monitoring Unit (CMU) of department of Animal Husbandry, Dairying and Fisheries (DAHD & F), GoI has certified NSS as 'A' Grade Semen Station. The NSS produces semen doses from Holstein Friesian (H.F.), Jersey and Murrah bulls. The annual production of NSS is four million doses. The NSS is able to meet the requirement of over 3,500 AI Centers of milk unions all over the State.

### 5.5 Comparative performance of AI Centers (BIRD-K, KMF and DAH&VS)

The performance of AITs is the best mainly due to their exclusiveness in providing the service backed by professional team available with BIRD-K vis-à-vis infrastructure provided and available with them. The AI workers of KMF center also have other responsibilities besides AI. Similar is the case with DAH&VS centers. Although performance of AI Centres of BIRD-K, KMF and DAH&VS have been studied extensively during the study, the comparison of the these Centres and ranking of the same based on performance may not be realistic as the three agencies have different primary objectives, strengths and weaknesses. DAH&VS has wide horizon of activities which also cover a small portion on AI and KMF has also other main objectives of increasing milk production and giving dairy farmers a remunerative price.

## Chapter 6

### Problem Statement

6.1 The planned interventions have since been implemented rather successfully to the extent the funds were actually made available / released.

6.2 The project is expected to resolve the wider problem of non-availability of breeding services for dairy animals in easy and hassle free manner. Judging by the qualitative way, the goal in this regard appears to be not reached in its true sense.

6.3 In absence of any record about history and pedigree of the dams, it is very difficult to conclusively state as to whether the AI programme implemented through BIRD-K is in conformity with breeding policy of GOK or not. However, based on the analysis of the data collected and compiled on semen supply and utilization vis-à-vis observations during the field visits, no deviations by and large was observed with regard to breeding policy at field level. Under field conditions, especially with farmers' herds, no breeding records or records on level of exotic inheritance are available. However, during the field visits no crossbred progeny of cattle exceeding 75% exotic inheritance was observed. There is a need to educate the AI Technicians to follow a well defined breeding regime so that the exotic inheritance is maintained at the desired level.

6.4 The breeding performance depends on many factors. However, the major factors which adversely affect the performance can be categorized under three heads namely, environmental factors, absence of good recording system and timing of insemination in relation to oestrus. The other factors associated with the animal are management, nutrition, genetic, stress etc. Above all, the skill of the inseminator is the most important factor which can result into good performance or otherwise. The achievements in terms of conception rates in Kalaburgi District have been lowest among all the north Karnataka Districts whereas in Bagalkote the same are consistently and significantly at the top.

6.5 The major limiting factor for success of AI has been detection of heat (oestrus). The correct detection of heat is vitally important and will help if and when insemination should occur while incorrect /inefficient detection of heat may lead to unreliable decision to breed.



Numerous factors, environmental and managerial and cow related play a role in oestrus expression and detection. There is a need to hold fertility camps to detect cow related problems and treat them appropriately on one hand and give orientation training to farmers about proper heat detection vis-à-vis time of insemination after the cow is observed in standing heat. The biological events associated with timing of insemination indicate that best results are obtained, if the animals are inseminated between eight to twelve hours after the onset of oestrus

6.6 The details of deliverable results expected from the project along with gaps, weaknesses, short comings etc are furnished in Table No: 10

**Table 10: Deliverable results expected from the project & gaps, weaknesses and short comings**

S No	Indicators / Short comings, Gaps etc.	Output / deliverable results
1	Project benefits meant for dairy animal owners in the are of select 79 AI Centres established by BIRD – K & not throughout the state.	No overlap in the areas where AI services are provided by KMF and DAH&VS with the AI services provided by BIRD-K centres.
2	A perusal of achievements reveals that of the nine districts where the scheme is operational, Bagalkote has consistently and significantly been at the top, whereas Gulbarga has consistently and significantly been at the bottom? What is the reason for this? What steps can be taken to increase achievement of Gulbarga?	The dairy farmers in Kalaburgi are having alternate sources of livelihood and as such livestock doesn't appear to be their livelihood means/subsistence part. As such there is a certain element of neglect/ignorance on the part of the farmers to take desired care and management of the animals.
3	Perception of stake holders/satisfaction among user groups	The farmers who utilized the services have good opinion about the timeliness and quality of services provided to them under the scheme. The stake holders recognized the need for such a kind of service and want the services to continue. The services rendered by BIRD-K has acceptance among farmers mainly due to reach/doorstep delivery. The farmers have appreciated the benefits derived from the scheme and have been actively participating. The BIRD-K

S No	Indicators / Short comings, Gaps etc.	Output / deliverable results
		has been successful in creating awareness among the farmers.
4	Regular monitoring by DAH&VS. Checking and verification of 10% of the conceptions and calves born by Deputy Director DAH&VS and reporting of the same to the Director, AHVS	<p>The verification was not carried out in all the districts/Taluks. However, the verification results did not differ much where sample verification was carried out by the Deputy Directors.</p> <p>The DLRC and SLTC meetings were not held regularly. In Kalaburgi and Yadagiri districts, two meetings each were held while in other districts only one meeting each was held.</p>
5	Adherence to the Breeding Policy of Government of Karnataka. The breeding policy envisages selective breeding of indigenous cattle breed for milk and draft and cross breeding of non descript cattle with exotic dairy breeds like HF and Jersey and limiting the exotic inheritance to around 50% in crossbred	Under field conditions, especially with farmers' herds, no breeding records or records on level of exotic inheritance are available. However, during the field visits no crossbred progeny of cattle exceeding 75% exotic inheritance was observed. There is a need to educate the AI Technicians to follow a well defined breeding regime so that the exotic inheritance is maintained at the desired level.

S No	Indicators / Short comings, Gaps etc.	Output / deliverable results
6	Maintenance of cold chain for semen straws.	<p>The LN<sub>2</sub> levels in the Cryo cans are measured from time to time. The LN<sub>2</sub> is topped up as per the requirement. The LN<sub>2</sub> is measured every alternate day and on an average it is replenished at an interval of 40 days i.e. around average nine trips per year. In case of Frozen semen carriers, the containers are topped up before the LN<sub>2</sub> level reaches below 20%. In case of Cryocan, it is ensured that the LN<sub>2</sub> level doesn't drop below 10%</p>

## Chapter 7

### Scope, Objectives and Issues for evaluation

7.1 The Department of Animal Husbandry & veterinary Services (DAH&VS), GoK entered into an agreement with the BIRD (BAIF Institute for Rural Development), Karnataka to promote and facilitate Artificial Insemination (AI) using frozen semen of pedigree sires of Cattle and Buffaloes. As per the agreement BIRD has established 73 AI centres in seven districts of Karnataka. These districts are (i) Kalburgi, (ii) Yadgir, (iii) Ballari, (iv) Raichir, (V) Vijayapura, (6) Bagalkote, and (7) Gadag.

7.2 The budge provided for setting up of 73 AI centres in seven districts of Karnataka is Rs. 11.42 crore, out of which Rs. 5395 crore has been released by GoK. The target of 2.79 lakh AI ws set and the achievement is 2.25 AIs. The target set for conceptions (confirmed pregnancies) was 1.11 lakh and the achievement is 0.99 lakh. Calving since inception of the programme is 4773 (males 24060 and females 23713).

7.3. The aggregate establishment cost incurred by the BIRD-K against the 28 centres is Rs 70, 35,532. The average per centre cost works out to Rs 2, 51, 269. During the course of the study 238 beneficiary farmers of BIRD-K from 28 AI centres located in seven districts were interviewed and their feedback is obtained through a semi structured questionnaire

7.4. The main objectives of the study are the following.

The evaluation study was commissioned with the following objectives:

- i. To evaluate as to whether the amount provided under the scheme was utilized by BIRD-K for the purpose and objectives laid down in the scheme and MoU.
- ii. Whether there is need for continuation of the scheme in the present form?
- iii. To compare the performance of BIRD-K centers with the AH Dept. and KMF centers, respectively.

7.5 Following major aspects were covered by the evaluation study:

**(A) About AI centers, semen source and charges:**

**(B) Analyses of achievements:**

**(C) Role of BIRD and Government:**

**(D) Residual Matters:**

7.6 The scope of the evaluation is 73 AI centres located in seven districts.

The purpose of evaluation is to evaluate as to whether the amount provided is utilized by the BIRD, Karnataka, for the purposes and objectives laid down in the scheme and MOU and whether there is need for continuation of the scheme in the present form.

An additional point to be evaluated is to compare the performance of BIRD with the AI centres managed by Animal Husbandry Department and KMF.

The population for the study is the 73 AI centres that exist in the seven districts of Karnataka. Of these, the sample comprised of selecting one AI centre at random in each taluk of each district, thus sample was of 28 AI centres in 28 taluks. All issues of performance of AI centres were evaluated from this sample. A control comprising of one AI centre of KMF and Government AI centre per district located nearest to at least any one of the sample AI centres was be taken. At least 30 individuals were covered by individual interview with a condition that not less than five villages per district were covered.

7.7 The issues for evaluation / evaluation questions are listed in annexure - B

## Chapter 8

### Evaluation Design and Selection of Sample

#### Evaluation design

The department of Animal Husbandry and Veterinary Services (AH &VS) Government of Karnataka (GOK), has been supporting BAIF Institute of Rural Development-Karnataka (BIRD-K) AI centers under the Centrally Sponsored Scheme (CSS). These centers help promote and facilitate Artificial Insemination (AI) using frozen semen of pedigree sires of cattle and Buffaloes. The services are provided at the doorstep of the farmers.

As per the agreement, BIRD-K has established 100 AI centers in nine districts of North Karnataka. The study area covered seven districts which have 83 centres in total. However, the sample for the study was drawn from 73 centres spread over 28 taluks. During 2014-15 total AIs performed in Karnataka through BIRD K AI Centres was 1, 78,079. The total confirmed pregnancies were 118023 while the no. of female calves born were 17,501. In respect of AI done Karnataka ranked 6<sup>th</sup> amongst 14 states.

The evaluation design was to study extensively the performance of AI Centres of BIRD-K. The extensive evaluation was done with the help of structured questionnaire and interviews with the officials and staff of BIRD K, KMF and DAH&VS AI Centres. Performance of breeding services, training and guidance given by BIRD AI to its staff for proper maintenance of AI centers and as well as dairy farmers for taking good reproductive care of the dairy animals was analysed through structured questionnaire. The dairy farmers were also requested to give suggestions for improvement of the scheme.

#### 8.1. Sampling size

- 8.1.1.** The population for the study was 73 AI centers of BIRD-K spread over 28 Taluks from seven districts of North Karnataka State as listed vide Annexure I of the RFP document.
- 8.1.2.** Out of the 73 centers the sample comprised of one AI centre at random in each Taluk of each district. Thus sample for BIRD-K worked out to 28 AI centers in 28 Taluks of seven districts of the state.
- 8.1.3.** The sample size for control group comprised of one AI centre each of KMF and AH&VS, per district. Thus a total sample for Control AI Centers worked out to 14. Besides this, two private AI workers were also covered additionally under the control group.
- 8.1.4.** For ascertaining the effect of the scheme at beneficiary level, at least 30 farmers from each district were covered by individual interview in such a way that not less than five villages per district be covered. Thus, 210 beneficiaries of BIRD-K AI centers were covered through random sampling @ 30 beneficiaries per district for seven districts.
- 8.1.5.** For comparison of the benefits derived by the beneficiaries from Control AI centres and BIRD-K AI centers, 10 beneficiaries/ AI Centre/ district for seven districts for each of KMF centers &

Govt. centers were covered. Thus, for the control AI centers, the sample size worked out to 140 beneficiaries (70 farmers each of KMF and DAH&VS).

The summary of the sample size along with sample type is furnished in Table-11.

**Table 11 : Summary of the sample size and sample type**

Sample type	AI Centres	Remarks
BIRD-K, AI centers	28	One Centre per Taluk for 28 Taluks from seven districts.
Control- KMF centers	7	One Centre per district in all the Seven districts.*
Control- AH & VS, GoK.	7	One Centre per district in all the Seven districts.
Control- Private	2	One each from Tiptur and Sira Taluks of Tumakuru district
Beneficiary farmers of AI centers of BIRD-K	210	30 beneficiaries/ district for Seven districts.(Minimum five villages per district will be covered)
Beneficiary farmers of Control AI centers.	140	10 beneficiaries/ AI Centre/ district for Seven districts for each of KMF centres & Govt. centres. [7x10x2]

\* Since, no KMF Centre was in operation in Yadgir district, two centres from Kalburgi were considered.

**8.1.6** It was ensured that in case of BIRD-K sample, the farmers in each district were from more than five villages.

**8.1.7** Besides the KMF and DAH&VS AI centres, two private commercial AI centres operating in Tumakuru district (one each from Tiptur and Sira taluk) were also covered additionally. Thus the total sample size for AI centre worked out to 44 centres comprising 28 BIRD – K centres, 7 centres each of KMF and DAH&VS and also 2 private commercial centres. The total sample size for farmers works out to 384 comprising 238 farmers of BIRD K, 72 farmers of KMF and 74 farmers of DAH&VS.

## Chapter 9

### Evaluation Methodology

9.1 The Technical Committee of KEA in its 25th meeting held on Dec 26, 2015 approved the Terms of Reference (TOR) for the external evaluation of the ‘Performance of BIRD’s Artificial Insemination Centres supported by the DAH&VS’

9.2 KEA, then finalized NABCONS as an evaluation agency/ Consultant Organization (CO).

9.3 Accordingly, NABCONS prepared an inception report which was submitted to KEA.

9.4 A presentation on inception report/ work plan was made to technical committee of KEA in its 25th meeting held on Dec 26, 2015.

9.5 The presentation covered among others, approach to each evaluation question of TOR with reference to different sets of questionnaires / formats (BIRD K, KMF, DAH&VS AI Centres, Beneficiary of AI services) included in the inception report.

9.6 The study tools were pre-tested as per the details given below.

- a. As a prelude to the Study, on 18.09.2015, NABCONS team held discussions with the Additional Chief Project Co-coordinator and other Officers of the BIRD-K, at their Head Quarters in Tiptur, Tumakuru district.
- b. On 22.09.2015, field level pre-testing of the Questionnaires developed for the Study was done in Ballari district.

9.7 The following evaluation methodology was followed for collection of primary and secondary data.

**a. Primary Data**

The study covered intensive sample survey by the members of evaluation team through tools developed for capturing the required information. For collection of primary data two sets of semi-structured questionnaires were used as study tools, one set for the AI centers (BIRD-K, KMF and GoK as also private commercial centres) and the other for the beneficiary farmers. The questionnaires covered all the relevant aspects of Terms of Reference of the Study. The Proforma questionnaires are enclosed as Annexure B.

**b. Secondary Data**

Secondary data regarding the scheme implementation were collected from Department of AH&VS, BIRD-K Head Office, Tiptur as also input supply division of BIRD-K at Dharwad.



9.8 During the study, 28 BIRD-K AI centers were covered which is as per the prescribed sample size. In case of farmers, a total of 238 farmers were covered as against the prescribed sample size of 210. The Taluk-wise and center wise no. of farmers of BIRD-K centres and villages covered are furnished in Table -12.

**Table 12 : Center wise (BIRD-K) Sample details as per Inception report and actually covered**

District	Taluk	Gram Panchayat	Centers	Inception report	covered	Villages
Kalaburgi	Sedam*	Kooganuru	Kooganuru	5	9	2
	Jewaragi	Sonna	Muthakoda	5	13	2
	Chittapura	Aranakal	Aranakal	5	5	2
	Alanda	Suntanoora	Suntanoora	5	9	2
	Chincholi	Basanthapura	Benekepally	5	5	2
	Afzalpura	Mallabad	Mallabad	5	7	1
<b>Sub Total</b>				<b>30</b>	<b>48</b>	<b>11</b>
Yadgiri	Yadgiri	Belagundi	Belagundi	10	10	3
	Surapura	Geddalamari	Geddalamari	10	10	3
	Shahapura	Marakal Kollura	Marakal Kollura	10	10	3
<b>Sub Total</b>				<b>30</b>	<b>30</b>	<b>9</b>
Ballari	Siraguppa	Muddatnur	Havinal	6	8	2
	Sanduru	Nidagurthi	Nidagurthi	6	7	3
	H.B.Halli	Halagapura	Magi Mavinahalli	6	6	1
	Hadagali	Nagathi basapura	Nagathi basapura	6	7	1
	Kudligi	Ramapura	Sunkadakallu	6	6	2
<b>Sub Total</b>				<b>30</b>	<b>34</b>	<b>9</b>
Raichur	Rayachuru	Ganadala	Ganadala	10	10	4
	Manavi	Aarooli	Rajolli	10	11	2
	Devadurga	Ramadurga	Ramadurga	10	10	2
<b>Sub Total</b>				<b>30</b>	<b>31</b>	<b>8</b>
Vijayapura	Vijayapura	Kumte	Kathnalli/Kumte	6	8	1
	Indi	Hadasasanga	Hadasasanga	6	5	1
	B. Bagevadi	Ballothi	Ballothi	6	8	2
	Sindagi	Korahalli	Jalawada/Korahalli	6	8	1
	Muddebihala	Kollora	Kollora	6	6	2
<b>Sub Total</b>				<b>30</b>	<b>35</b>	<b>7</b>

District	Taluk	Gram Panchayat	Centers	Inception report	covered	Villages
Bagalkot	Hunagunda	Vadageri	Vadageri	10	10	2
	Badami	Kerakalamatti	Kerakalamatti	10	10	2
	Bilagi	Anagawadi	Yelliguthi	10	10	2
<b>Sub Total</b>				<b>30</b>	<b>30</b>	<b>6</b>
Gadag	Mundaragi	Kadampura	Kadampura	10	10	2
	Rona	Hunagundi	Hunagundi	10	10	2
	Sirahatti	Hullura	Hullura	10	10	3
<b>Sub Total</b>				<b>30</b>	<b>30</b>	<b>7</b>
<b>Grand Total</b>				<b>210</b>	<b>238</b>	<b>46</b>

**9.9** A total of 146 control group farmers from 20 villages (72 farmers of KMF AI Centers from eight villages and 74 farmers of DAH&VS centers from 20 villages) were covered. District-wise Sample details of KMF and DAH&VS centers as per Inception report and actually covered are furnished in Table No. 13

**Table 13 – District-wise sample details of KMF and DAH & VS (AI centers and farmers)**

District	KMF AI Centers and Farmers				DAH&VS AI centers and farmers			
	Taluk	Centers	Farmers		Taluk	Centers	Farmers	
			A	B			A	B
Kalaburgi	Kalaburgi	Pattan	10	10	Kalaburgi	Harasur	10	10
Kalaburgi	Aland	Hodalur	0	10	-	-	-	-
Yadagiri	-	-	10	0	Yadagiri	Yelheri	10	<b>10</b>
Ballari	Hadagali	Uttangi	10	12	Hadagali	H.Mallanakere	10	13
Raichur	Sindhanuru	Venkatagiri	10	10	Rayachuru	Kalmala	10	11
Vijayapura	Vijayapura	Takkalike	10	10	Vijayapura	Tikota	10	10
Bagalkot	Bilagi	Chikkalagundi	10	10	Bilagi	Katariki	10	10
Gadag	Gadag	Kanivi	10	10	Gadag	Hulikoti	10	10
<b>Districts</b>	<b>7 Taluks</b>	<b>7 Centres</b>	<b>70</b>	<b>72</b>	<b>7 Taluks</b>	<b>7 Centres</b>	<b>70</b>	<b>74</b>

N.B 1: The numbers mentioned vide column marked 'A' refer to sample size as per the stipulation while 'B' refer to the sample size actually covered.

N.B 2: Since KMF, AI Centre is not operating in Yadgiri district, twenty farmers of two KMF centres in Kalaburgi district were covered, so as to make good the total sample of seventy for KMF.

## Chapter 10

### Data Collection and Analysis

10.1 For the purpose of the study, the relevant questionnaires / interview schedules were developed for different sample types i.e. BIRD K AI Centres, KMF AI centres, DAH&VS AI Centres and also for beneficiaries of ABIRD-K AI Centres. The quantitative primary data collected from the field as also secondary data collected from relevant sources (BIRD-K, KMF, DAH&VS) were compiled and digitalized for the purpose of obtaining qualitative data with reference to the sample type.

10.2 The data collected was planned as per the KEA requirement and as indicated in the inception report which was approved by KEA in its meeting held on 31.12.2015. Over & above the plan coverage, 28, 2 and 4 extra sample of farmers for BIRD K, KMF and DAH&VS respectively. The details of the planned sample size and actual coverage are furnished in Table No: 14

**Table 14 : District-wise Sample details as per inception reports and actually covered**

SI. No	District	Particulars	BIRD-K		KMF		DAH&VS		Total	
			A	B	A	B	A	B	A	B
1	Kalburgi	AI Centres	6	6	1	2	1	1	8	9
		Farmers	30	48	10	20	10	10	50	78
2	Yadgiri	AI Centres	3	3	1	0	1	1	5	4
		Farmers	30	30	10	0	10	10	50	40
3	Ballari	AI Centres	5	5	1	1	1	1	7	7
		Farmers	30	34	10	12	10	13	50	59
4	Raichur	AI Centres	3	3	1	1	1	1	5	5
		Farmers	30	31	10	10	10	9	50	50
5	Vijayapura	AI Centres	5	5	1	1	1	1	7	7
		Farmers	30	35	10	10	10	10	50	55
6	Bagalkot	AI Centres	3	3	1	1	1	1	5	5
		Farmers	30	30	10	10	10	12	50	52
7	Gadag	AI Centres	3	3	1	1	1	1	5	5
		Farmers	30	30	10	10	10	10	50	50
	<b>Total</b>	<b>AI Centres</b>	<b>28</b>	<b>28</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>42</b>	<b>42</b>
		<b>Farmers</b>	<b>210</b>	<b>238</b>	<b>70</b>	<b>72</b>	<b>70</b>	<b>74</b>	<b>350</b>	<b>384</b>

11 N.B 1: The numbers mentioned vide: column marked 'A' refer to sample size as per the stipulation while 'B' refer to the sample size actually covered.

12 N.B 2: Since KMF, AI Centre is not operating in Yadgiri district, two KMF centres in Kalburgi district were covered, so as to make good the total sample of seven for KMF.

10.3 Out of the various sample types, the important sample has been the beneficiaries of BIRD AI centres, followed by control group respondents from KMF AI Centres and DAH&VS AI Centres.

During interview with the beneficiaries of all three types of AI Centres, the information sought was of primary nature (a suitable schedule was also prepared with a view to capture uniform information for easy compilation and analysis). The information collected from the dairy farmers consisted of the following particulars.

- i Beneficiary details
- ii Breakup of breedable female bovines
- iii Availability of breeding services and their proximity
- iv Details regarding the service availed
- v Availability of other AI centres / services
- vi Training guidance
- vii Suggestions regarding the scheme

During the interview of the officials and staff of the BIRD K AI Centre, KMF AI Centre and DAH&VS AI Centre, the staff and officials shared detailed information on following particulars.

- i. Profile of AI Centre
- ii. Manpower
- iii. Trainings required and given
- iv. Work schedule
- v. Infrastructure provided and adequacy thereof
- vi. Input supply arrangement and cost
- vii. Service charge
- viii. Working results
- ix. MIS and Monitoring
- x. Cost incurred per service
- xi. Performance of the centre

10.4 During the field visit to the AI centres, one to one interview with the Dairy farmers who were beneficiaries of the breeding services from AI centres was organized. This was followed by collection of primary data from AI Centres. During the visit to the district where BIRD K AI centre is located, discussions were held with the Deputy Directors of the DAH&VS and also officials of District Milk Union. Wherever possible depending on the availability of officials,

the discussions were held on the first day of the visit to the district head quarter followed by wrap up discussions on the last day of the visit.

Analysis of results: The data collected with the help of structured questionnaires were compiled and digitalized using Excel spread sheets. While presenting the results in the respective chapters, the outlier responses beyond data cleaning process were not considered for reporting. Depending on the appropriateness and feasibility, quantitative data were put to analytical techniques / statistical tools like averages, percentages etc and summarized for qualitative presentation. Due care is taken to ensure that the data collected, compiled and presented can be generalized to the large population in question.

The major areas covered under various heads are listed below.

#### **About AI centers, semen source and charges:**

The staff and equipment provided by BIRD-K at each Artificial Insemination (AI) center. Qualification and experience of each staff member.

Arrangement of Liquid Nitrogen made by BIRD-K. Frequency of measuring or replacement of LN2

Source of semen that is used by BIRD-K for AI and quality certification process for semen  
Frequency or eventuality at/after which the quality of semen in AI centers was tested along with the results.

Breeds of cattle/buffaloes whose semen was used in AI. District wise details of fixed breed/breeds, the semen of which was used for AI in each district. Conformation of breed wise ditrict wise semen usage with the Breeding Policy of Karnataka.

Charges for AI that is collected by BIRD-K from farmers and deposit of the same to the Government

#### **Analyses of Achievements was made on following aspects.**

The conception to AI service (excluding repeat service) ratio/ percentage achieved by the AI centers. Significant statistical difference in the center to center or district to district (conception to AI service ratio/percentage to be calculated for district as a whole too), if any. Reason for the same.

Calving to conception ratio/ percentage achieved by the AI centers. Significant statistical difference in the center to center or district to district (calving to conception ratio/percentage to be calculated for district as a whole too), if any and the reasons for the same.

Comparison of conception to AI and calving to conception ratio/ percentage of districts or the State as a whole with the standards of Government of Karnataka and other States. In case the difference of these is statistically significant, the reasons for the same.

The reasons for district specific consistency in the operational results and steps to be taken for improving the same.

### **Role of BIRD and Government:**

Submission of monthly report of conceptions and calves born, to the Deputy Directors of the districts by BIRD K

Verification of 10% of the conceptions and calves born by the District Deputy Director, DAH&VS and reporting of the same to the Director, AH&VS. Deviation, if any from the reports furnished by BIRD-K.

Frequency of meeting of District Level Review Committees and reporting to the State Level Review Committee?

Convening of State Level Review Committee meeting once in a year by DAH&VS.

### **Residual Matters:**

Comparison of BIRD-K AI centers of Karnataka under evaluation with AI centers of Government of Karnataka and that of KMF. Reasons for this difference.

Actual per service cost incurred (including establishment, salaries and maintenance) by the department, KMF and BIRD-K AI centres and the cost recovered from cow/buffalo owners using their services

Opinion of the farmers who have utilized the services of BIRD AI centers under this scheme about the timelines and quality of services provided to them. Suggestions for improving the scheme.

Occurrence of overlap of the efforts of department, KMF and BIRD-K AI centres and the chance of so happening.

Methodology of calculation of success rate for conception (confirmed pregnancy) to service and bench mark figures for conception to AI service for each district, if existing, for department, KMF and BIRD-K AI centres, The same to be done for Calving to conception ratio also.

Data pertaining to year-wise supply and consumption of semen and year-wise supply of LN2 and AI equipment was collected from BAIF. Analysis of the data gave an insight into the operations and operational efficiency of the BIRD-K's processes. Data on year-wise extension activities carried out by AI Centre helped the study team to understand the training and capacity building efforts made by BIRD-K. Data collected for year-wise working results enabled the study team to arrive at conception ratio and conception to calving ratio.

## Chapter 11

### Findings & Discussions

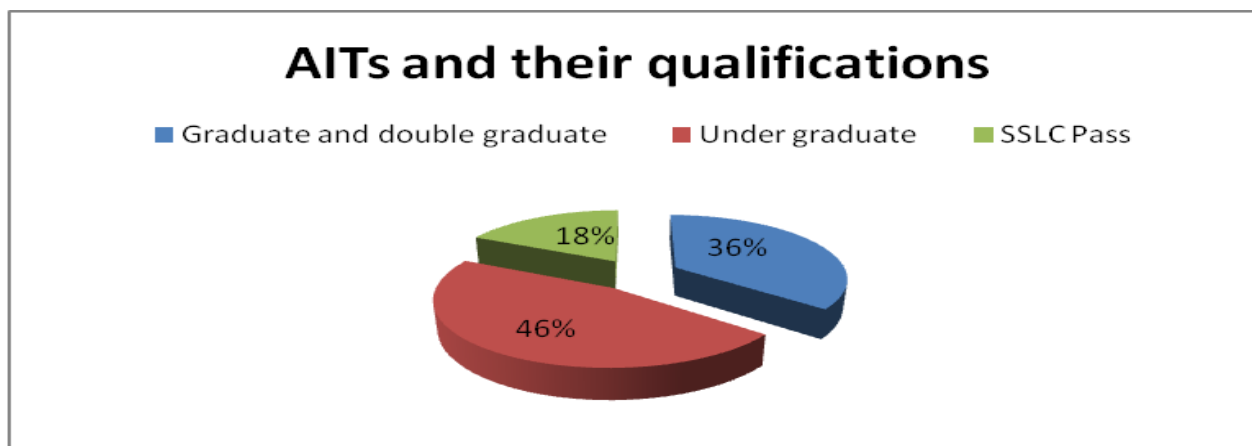
#### 11.1. Adequacy of Infrastructure for AI centers

**11.1.1** The staff and equipment provided by BIRD-K at each AI center are adequate. BIRD K has created all relevant infrastructure facilities and utilized the funds properly. The Evaluation Team found the infrastructure in place in the field. The break up details of per centre average cost incurred by BIRD K in respect of 28 centres is indicated in the relevant paragraph subsequently (para 5.16) which gives a fair idea of the infrastructure installed by BIRD-K. The aggregate establishment cost incurred by the BIRD-K against the 28 centres is Rs 70, 35,532. The average per centre cost works out to Rs 2, 51, 269. During the course of the study 238 beneficiary farmers of BIRD-K from 28 AI centres located in seven districts were interviewed and their feedback is obtained through a semi structured questionnaire. All the farmers indicated that service of BIRD-K has been good particularly in view of the fact that the service is available promptly at their doorstep and the results are also good. Interview schedule for beneficiaries of AI centres have addressed the relevant questions vide question 4 of the questionnaire– viz. Whether the service is satisfactory? Whether you will continue with the agency in future? etc. All the farmers have answered affirmatively to the above two questions.

**11.1.2** As per the inputs received from the Additional Chief Project Coordinator, BIRD-K, the requirement of minimum expected qualification for AI Technician (AIT) is SSLC (Pass or failed/appeared). However, there is no hard and fast rule/prescription as regards academic qualification. The AI technician is supposed to be a localite and should be willing to work in rural areas with a good command over local language. Each of the AI technicians fulfilled the minimum requirement of academic qualification. Their qualifications ranged from SSLC to double graduate (BA, B.Ed.). The details of qualification of the AITs manning the sample AI centres in the Study districts are furnished in Table No.15 and graphically represented in Figure No.1.

**Table 15: AI Technicians and their qualification - BIRD-K Centers**

Sl.no.	Qualification	No. of AITs	% to total	Remarks
1	Graduates and double graduates	10	36	B.A., B.Ed -2, B.A.-7, B.Com-1.
2	Under Graduate	13	46	Dairy diploma-3, PUC-9, ITI-1
3	SSLC Pass	5	18	-
	Total	28	100	



**Figure 1: AITs and their Qualifications**

**11.1.3** None of the AIT appointed had previous experience in AI work. The class room and practical training for the persons selected as AIT was organized at BIRD-K Gramodaya Training Center, S Lakkihalli, Tiptur (Tumakuru dsitric). The said training programme was for a duration 21 days. This was followed by two to six months internship with some existing AI technicians at an identified center. The trainee AI Technician was then assessed suitably for his/her performance before taking up independent charge of a center. The AIT is given independent charge of a center only when the center-in-charge (where he/she has gone internship) certifies that the performance of the intern/trainee was satisfactory. Thus, efforts are made to ensure that the AIT has perfected the technique. Over the years (ranging from four to five years) they appear to have gained sufficient on the job experience and as such their experience was sufficient.

**11.1.4** BIRD –K has provided one Cryocan (35 litre capacity), one Frozen semen (FS) carrier and one two wheeler (motorcycle) to each of the AI technician. Besides this, consumables like, AI guns (one each), AI sheaths, hand gloves etc. are provided as per the requirement. The AI technician is provided an office room in the village where the center is located. At each center, furniture items like table, chair/s, almirah etc. are provided. The stationery items are also



provided as per the requirement. On an average the cost of infrastructure of the AI center works out to around Rs. 84,000 inclusive of Rs 3860 towards consumables for the first year (Fixed costs of Rs 80,130 + Rs. 3860). The item wise break up is furnished in the Table No.16.

**Table 16: Average cost of infrastructure provided at each BIRD-K AI center**

(Amt. in Rs.)

Sl.no.	Particulars	Specifications	Quantity (Nos)	Basic Unit rate	Insurance and Transport	Total unit rate	Total cost
A	AI equipments						
1	LN2 Cryo can	35 lts – BA 35	1	16700	3755	20,455	20,455
2	FS Carrier	3 lts – BA 3	1	7450	1546	8996	8996
3	AI gun		1	285	-	285	285
	Sub total						29736
B	Furniture						
1	Steel Table	4' X 2' X 15''	1	1816	4	1820	1820
2	Steel Chairs	Arm chair	1	960	7	967	967
3	Visitors' chair	Plastic chair	2	392	8	400	800
4	Steel Almirah	5.5'X33''X18''	1	5675	13	5688	5688
	Sub Total						9375
C	Two wheeler	Hero Honda	1	39000	519	39519	39519
D	Others	Display charts	5	300			1500
	Total Fixed Cost						80,130
E	Consumables						
	(I yr)						
1	AI Sheaths	Universal	1800	0.7	-	0.7	1260
2	Hand Gloves (imported) shoulder length	HM - 14 microns	2000	1.3	-	1.3	2600
	Sub Total						3860
F	Grand Total						83990

**NB:** 1. Cryocans and FS carriers are being sourced from IOCL, Nasik.

2. AI guns are sourced from BAIF Pune while AI Sheaths and hand gloves from M/s SM industries, New Delhi (The requirement of AI sheaths range from 1200 to 1800 depending on AI target)
3. The furniture items are purchased from M/s Delight furnitures, Hubli
4. The display charts are supplied by BIRD-K.
5. The two wheelers are purchased from M/s Chadda motors, PB road, Dharwad.

**11.1.5** Besides the infrastructure provided at the AI center, the BIRD-K has created certain infrastructure for storage of semen and for transport of liquid nitrogen at Dharwad. The unit

landed cost of Jumbo semen container (capacity 15,400 doses) and LN2 transport container (TA-55) is Rs. 28,404 and Rs. 20,326, respectively. The standard requirement for LN2 transport container is one TA-55 container per five centers.

**11.1.6** The various items of recurring expenses of a center comprises of attendance allowance, propulsion charges (vehicle running expenses), programme promotion, consumable stores (AI sheaths, hand gloves) printing and stationery, telephone expenses, bank charges, miscellaneous expenses (photo charges) and tour bills (Travelling and halting expenses) of the AIT.

**11.1.7** The AI worker at KMF Center is a staff/employee of Dairy Co-operative Society, who is imparted training in AI and first-aid for 40 days (of which 10 days is practical training) at the KMF Training Centre, Dharwad. Refresher training of 10 days is also provided from time to time depending on the requirement. The qualifications of AI workers at KMF centers ranged from SSLC to graduation (B.A.). The details are furnished in Table No. 17

**Table 17: Details of qualification held by AI workers of KMF AI centers**

Sl. NO.	Qualification	Location of Centers (districts)
1	S.S.L.C.	Kalburgi (Hudalur) and Gadag
2	P.U.C.	Kalburgi (Pattal), Ballari, Bagalkote and Raichur (II PUC)
3	B.A.	Vijayapura

**11.1.8** The required infrastructure (cryocans, F.S. Carriers, AI Guns etc.) is also provided by KMF. However, there is no uniformity and all centers are not provided with F.S. carriers (For those societies who cover only single village, the animals are brought to the society and hence the requirement of F.S. carriers as also two wheelers may not be there). The AI workers are not provided mobility (two wheelers). Hence, they use their own vehicle for AI work, if required. Some societies also provide trevice.

**11.1.9** In case of DAH & VS, the AI service is provided by the in-charge of the Veterinary Institution and the qualifications depend upon the type of institute headed by them. Their qualifications are P.U.C. (Veterinary Inspectors), B.V.Sc. (Veterinary Officers) and M.V.Sc. (Veterinary Surgeon). The veterinary institutions are provided with cryocans but the F.S. carriers are not provided to all. However, F.S. carriers are made available on demand, if indented. The department has 7000 cryocans in the State. The Veterinary Institutions do not have mobility and no two wheelers are provided. The institution in-charges use their own vehicles as per the requirement.

**11.1.10** One of the private commercial workers was qualified up to S.S.L.C. while the other held Dairy Diploma. They are trained by BIRD-K at its training and demonstration campus at S Lakkihalli, Tiptur. This is followed by field training/on the job training/internship of say three months or so. The cryocans, F.S. carriers and AI equipments are provided to them by BIRD-K on a rent against a cash deposit of Rs.10,000/-. These private workers are required to purchase two wheelers. The average cost of two wheelers is around Rs.50, 000/-.

**11.1.11** Introduction of AI workers by BIRD K (at their own centers and private commercial AI workers at other places) and KMF has, thus, helped in smooth and successful change in breeding service delivery system, i.e. the transition of delivery of services by Vets to Non-Vets and then to lay inseminator.

## 11.2. Arrangements for supply of LN<sub>2</sub>

**11.2.1** The BAIF has made proper arrangement for supply of LN<sub>2</sub> at each center.

**11.2.2** The LN<sub>2</sub> is procured from Karnataka Milk Federation (KMF), M/s Abhijit enterprises, Kolhapur, MSPL, Hospet. (The price of LN<sub>2</sub> ranged between Rs 38 to Rs. 45 per liter).

**11.2.3** The LN<sub>2</sub> levels in the Cryo cans are measured from time to time. The LN<sub>2</sub> is topped up as per the requirement. The LN<sub>2</sub> is measured every alternate day and on an average it is replenished at an interval of 40 days i.e. around average nine trips per year. In case of Frozen semen carriers, the containers are topped up before the LN<sub>2</sub> level reaches below 20%. In case of Cryocan, it is ensured that the LN<sub>2</sub> level doesn't drop below 10%. The details of center-wise and year-wise number of times LN<sub>2</sub> was replaced as also average replacement quantity are furnished in Table no 18:

**Table 18: Center-wise and year-wise number of times LN<sub>2</sub> replaced as also avg. replacement quantity**

Sl.No	Centers	11-12	12-13	13-14	14-15	Total (4 yrs)	Details of replacement of LN <sub>2</sub> (lit)		
							No. of times in		Quantity replaced
							4 yrs	Per yr	
1	Kooganur	190	299	40	270	799	27	7	30
2	Muthakoda	165	244	234	239	882	30	8	29
3	Aranakal	210	192	214	264	880	26	7	34
4	Suntanoora	245	245	207	275	972	32	8	30
5	Benekepally	230	250	196	235	911	31	8	29
6	Mallabad	275	275	264	273	1087	33	9	33
<b>Kalaburgi Total</b>		<b>1315</b>	<b>1505</b>	<b>1155</b>	<b>1556</b>	<b>5531</b>	<b>179</b>	<b>30</b>	<b>186</b>

	<b>Average</b>	<b>219</b>	<b>251</b>	<b>193</b>	<b>259</b>	<b>922</b>	<b>30</b>	<b>8</b>	<b>31</b>
7	Belagundi	210	275	270	270	1025	31	8	33
8	Geddalamari	210	280	280	275	1045	33	9	32
9	Marakal Kollura	210	240	264	260	974	30	8	32
<b>Yadagiri Total</b>		<b>630</b>	<b>795</b>	<b>814</b>	<b>805</b>	<b>3044</b>	<b>94</b>	<b>32</b>	<b>97</b>
	<b>Average</b>	<b>210</b>	<b>265</b>	<b>271</b>	<b>268</b>	<b>1015</b>	<b>31</b>	<b>8</b>	<b>32</b>
10	Havinal	200	205	250	225	880	32	8	28
11	Nidagurthi	200	180	220	210	810	33	9	25
12	Magi Mavinahalli	230	205	250	225	910	33	9	28
13	Nagathi basapura	230	205	250	225	910	34	9	27
14	Sunkadakallu	230	205	250	225	910	34	9	27
<b>Ballari Total</b>		<b>1090</b>	<b>1000</b>	<b>1220</b>	<b>1110</b>	<b>4420</b>	<b>166</b>	<b>34</b>	<b>133</b>
	<b>Average</b>	<b>218</b>	<b>200</b>	<b>244</b>	<b>222</b>	<b>884</b>	<b>33</b>	<b>9</b>	<b>27</b>
15	Ganadhala	175	70	215	186	646	22	6	29
16	Rajolli	280	0	102	275	657	20	5	33
17	Ramadurga	125	239	217	221	802	27	7	30
<b>Raichur total</b>		<b>580</b>	<b>309</b>	<b>534</b>	<b>682</b>	<b>2105</b>	<b>69</b>	<b>23</b>	<b>92</b>
	<b>Average</b>	<b>193</b>	<b>103</b>	<b>178</b>	<b>227</b>	<b>702</b>	<b>23</b>	<b>8</b>	<b>31</b>
18	Kumte	240	150	270	240	900	30	8	30
19	Hadalasanga	240	180	270	270	960	32	8	30
20	Ballothi	224	213	330	289	1056	37	10	29
21	Korahalli	180	270	270	210	930	31	8	30
22	Kollora	180	270	270	210	930	31	8	30
<b>Vijayapura Total</b>		<b>1064</b>	<b>1083</b>	<b>1410</b>	<b>1219</b>	<b>4776</b>	<b>161</b>	<b>32</b>	<b>149</b>
	<b>Average</b>	<b>213</b>	<b>217</b>	<b>282</b>	<b>244</b>	<b>955</b>	<b>32</b>	<b>8</b>	<b>30</b>
23	Vadageri	270	240	270	270	1050	37	10	28
24	Kerekalamatti	270	240	270	270	1050	35	9	30
25	Yelliguthi	270	240	270	270	1050	35	9	30
<b>Bagalakote Total</b>		<b>810</b>	<b>720</b>	<b>810</b>	<b>810</b>	<b>3150</b>	<b>107</b>	<b>36</b>	<b>88</b>
	<b>Average</b>	<b>270</b>	<b>240</b>	<b>270</b>	<b>270</b>	<b>1050</b>	<b>36</b>	<b>9</b>	<b>29</b>
26	Kadampura	239	120	280	285	924	30	8	31
27	Hunagundi	210	260	265	260	995	34	9	29
28	Hullura	248	270	245	280	1043	35	9	30
<b>Gadag Total</b>		<b>697</b>	<b>650</b>	<b>790</b>	<b>825</b>	<b>2962</b>	<b>99</b>	<b>33</b>	<b>90</b>
	<b>Average</b>	<b>232</b>	<b>217</b>	<b>263</b>	<b>275</b>	<b>987</b>	<b>33</b>	<b>9</b>	<b>30</b>
<b>Total for 7 dist.</b>		<b>6186</b>	<b>6062</b>	<b>6733</b>	<b>7007</b>	<b>25988</b>	<b>875</b>	<b>31</b>	<b>835</b>
<b>overall average</b>		<b>221</b>	<b>217</b>	<b>240</b>	<b>250</b>	<b>928</b>	<b>31</b>	<b>8</b>	<b>30</b>

**11.2.4** It can be seen from the above table that the cold chain is very well maintained and on no occasion the Cryocans/FS carrier have become dry.

**11.2.5** The KMF Centers receive their LN<sub>2</sub> supplies from the KMF through the milk unions/KMF HQ. The frequency of supply is monthly.

**11.2.6** The Veterinary Institutions receive their LN<sub>2</sub> supply from their taluks/district HQ or from department's Semen Collection Centers, as and when required. In some institutions, the supply is received monthly on a fixed day while at other institutions, the supply is made available as and when required/necessary.

**11.2.7** The BIRD-K takes care of the requirement of LN<sub>2</sub> in respect of private commercial AI workers. As per the package deal, the BIRD K charges Rs.50/semen dose which is inclusive of full LN<sub>2</sub> cost as may be incurred. However, the cost of Rs.50/semen dose is applicable only if the private AI worker purchases a minimum of 1200 semen straws per annum which is a breakeven level for BIRD-K. It was gathered during the discussions that NDDDB is also coming up in a big way for supply /sale of semen in Karnataka using the same channel (the private AI workers) as that of BIRD K. While the charges of BIRD K are Rs.50/dose the, NDDDB is proposing to charge Rs.30/dose. The NDDDB's offer to supply semen doses at Rs.30/- inclusive of LN<sub>2</sub> requirements is stated to be comparatively low as BIRD K has been claiming the breakeven level of Rs.50/dose.

### **11.3 Source of semen**

**11.3.1** All the BIRD-K centres are sourcing the semen from a single source namely, the Central Research Station (CRS) of BAIF Development Research Foundation at Uruli Kanchan, Maharashtra. Since BIRD-K is promoted by BAIF, BIRD-K will hardly opt for sourcing of semen from any other agency/station. The KMF sources the semen from its captive source i.e. Nandini Sperm Station (NSS) or at the most from NDDDB. The DAH&VS has also its own source (five stations located in the state of Karnataka).

**11.3.2** The CRS of BAIF Development Research Foundation has implemented a Quality Management System in accordance with ISO 9001-2008 for processing and freezing of cattle and buffalo semen. The ISO 9001:2008 certificate was issued with effect from 11.03.2013 with validity of three years. The semen station was evaluated by Central Monitoring Unit

(CMU) of Department of Animal Husbandry, Dairying and Fisheries (DAHD&F) Government of India (GOI) during 2012-13. The CMU has graded the semen station as grade A (excellent) with a score of 88.20 which is third highest score next to semen station at Gurgaon, Haryana (score 89.40) and Banas in Gujarat (score 88.40).

**11.3.3** The BIRD-K centers in Karnataka receive their replacement stock of semen from input supply division, Dharwad (A minimum stock of 700 doses per bull is maintained at Dharwad). The details of breeds whose semen stock is normally maintained/stored/available at BIRD-K Dharwad are furnished in Table No.19.

**Table 19: Details of breeds whose semen stock is maintained at Dharwad**

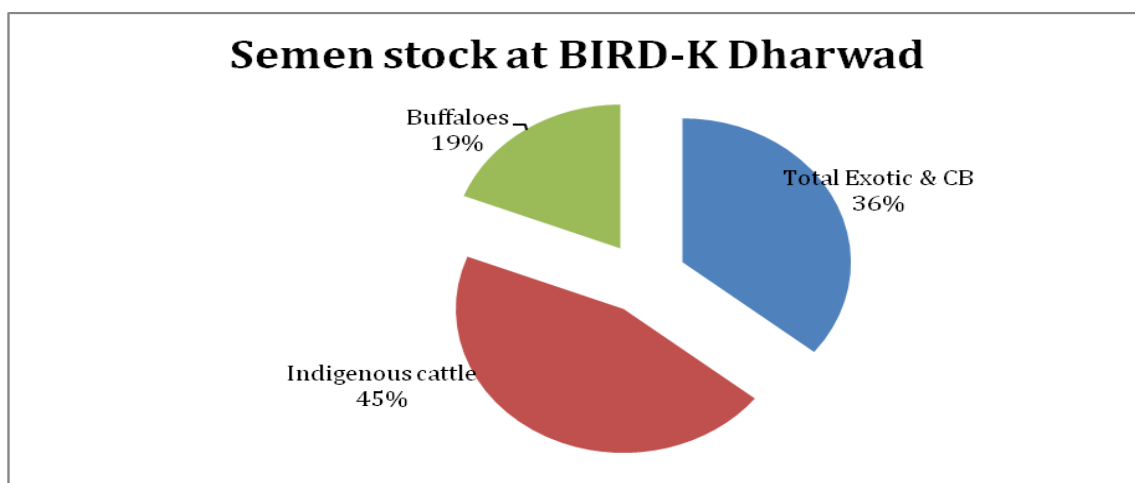
Sl.no.	Species	Breeds whose semen is normally stored/available
1	Cattle-Exotic and crossbreds	Jersey (J) & Holstein Friesin (HF)
2	Indigenous cattle breeds	Amruth Mahal, Hallikar, Krishna Valley, Khillar, Ongole, Gir and Sahiwal
3	Buffalo	Surti, Murrah and Jafrabadi

**11.3.4** Just for illustration/indication purpose, the details of breed-wise semen stock as on 29.02.2016 at Dharwad are furnished in the Table No. 20 and graphically represented in Figure No.2.

**Table 20: Breed-wise average no. of semen doses stocked at Dharwad (As on 29.02.2014)**

Sl. No.	Species/breed	Blood level	No. of bulls	Doses	% to Total
I	1.Exotic cattle- Jersey	(a) 100%	1	700	2
	2. Crossbred Jersey	(b) 75%	2	3500	12
	<b>Exotic &amp; CB Jersey</b>		<b>3</b>	<b>4200</b>	<b>14</b>
	Exotic – HF	(a) 100%	2	3500	12
	Crossbred – HF	(b) 75%	1	2800	10
	<b>Exotic &amp; CB HF</b>		<b>3</b>	<b>6300</b>	<b>21</b>
	<b>Total Exotic &amp; CB</b>		<b>6</b>	<b>10,500</b>	<b>36</b>
	(a) A. Mahal	100%	1	3500	12
	(b) Hallikar	100%	1	2100	7
	(c) K Valley	100%	1	1400	5
	(d) Khillar	100%	1	4200	14
	(e) Ongole	100%	1	700	2
	(f) Gir	100%	1	700	2

	(g) Sahiwal	100%	1	700	2
	<b>Indigenous cattle</b>		<b>7</b>	<b>13300</b>	<b>45</b>
	<b>Progressive Total</b>			<b>19600</b>	<b>67</b>
II	(a) Surti	100%	2	2800	10
	(b) Murrah	100%	1	2100	7
	(c) Jafrabadi	100%	1	700	2
	<b>Buffaloes- Sub total</b>		<b>4</b>	<b>5600</b>	<b>19</b>
III	<b>Grand total</b>		<b>17</b>	<b>29400</b>	<b>100</b>



**Figure 2: Semen stock at BIRD-K Dharwad**

**11.3.5** The KMF AI centers receive their semen supply from the respective milk unions/KMF HQ or Nandini Sperm Station.

**11.3.6** The Veterinary Institutions receive their semen supply from the respective district HQ / from Livestock Breeding and Training Centre. In the State, the districts receive their major supply (69%) from Semen bank at Hebbal, followed by Centralised Semen Collection Centre at Dharwad (26%) and the balance 5% from Livestock Breeding and Training Centre, at Munirabad (2014-15 data).

**11.3.7** The semen requirement of Private AI centers is taken care of by BIRD K.

#### **11.4. Semen Quality**

**11.4.1** The quality testing and certification aspects of semen are taken care of by BAIF at the CRS, Uruli Kanchan.

**11.4.2** In very rare to nil case/s, the quality testing is done by BIRD-K/BAIF at field level using the facilities (microscopes) available at agricultural colleges/universities. Microscopic/microscope evaluation of semen is possible at field level for key parameters like motility, sperm count and normalcy of sperms. As per the latest Minimum Standard Protocol (MSP) post-thaw motility should be examined at 24 hours (after freezing). For a minimum concentration of 20 million per dose, minimum acceptable post-thaw motility shall be 50% and semen doses below 50% progressive motility shall be discarded. In view of this, the semen is termed as poor quality where post thaw motility is less than 50%. Further, as per the MSP quality checking of straws, drawn randomly from long storage containers once in three months, should be done as apart of quality assurance. There is no legislation to govern the quality of semen. Quality of semen in terms of concentration per straw varies from source to source. Under the initiative taken under National Project on Cattle and Buffalo Breeding (NPCBB) a Central Monitoring Unit (CMU) was constituted by GOI. The CMU evaluated 60 Frozen Semen Stations (FSS) out of 64 Semen Bull Stations in the country and submitted the status report in October 2004. As per the report, only two stations were categorized as grade A (i.e. excellent without deficiencies) while, 12 centers each were classified as grade B (deficiencies in one or two aspects of semen production). As per the status report submitted by CMU, the BAIF station was classified as category B. Incidentally both the grade A centers are of NDDDB (Bidaj in Gujarat and Salon in Uttar Pradesh). Subsequently, during the year 2012-13, the CMU completed evaluation of 52 semen stations in the country. As per the CMU's evaluation report (2012-13), amongst the stations graded as Excellent (Grade A), the BAIF station is ranked 5<sup>th</sup> with a score of 82.20 (A new station at Rohtak in Haryana has also equal/similar score of 88.20). The top four stations in the country as per the CMU report (2012-13) are SAG Bidaj (Gujarat), ABC Saloon (Uttar Pradesh), Mattupatty (Kerala) and Banas (Gujarat) with a score of 98.60, 95.20, 90.00 and 88.40, respectively. Out of the five stations in Karnataka, three stations located at Hesaraghatta Viz, Nandini Sperm Station (NSS), Kakolu, CSCC and CFSP&TI are graded as "Excellent" (Grade A) with a score of 85.80, 84.40 and 81.60, respectively. The other two stations Viz, SLBTC, Hesaraghatta and CSCC, Dharawad are graded as "Very Good" (Grade B) with a score of 68.80 and 68.60, respectively.

11.4.3 Thus, it will be seen that all the sperm stations from where the semen is sourced by these agencies rank very high (Grade A stations- total five - BAIF, KMF, three stations of



DAH&VS and grade B two stations of DAH&VS). Although the semen quality used in the state by the three agencies can be considered as most acceptable, there are variety of other factors (such as physiology of the cow, environment, nutrition status, time of insemination vis-à-vis stage of oestrus, proper storage of semen and maintenance of cold chain, technical competitiveness of the technician, etc) which influence the success rate and play important role in contributing towards ultimate success. Hence, quality of semen may not be an end of the story and may not be correlated to success factor and arriving at conclusive finding.

### 11.5. Adherence to the Breeding Policy of Government of Karnataka.

**11.5.1** The draft policy was approved by GoK in GO No. PASAMY/SALEVI/2011, Dated: 03.03.2011. The salient features of the policy are as under:

a. The state possesses the most praiseworthy dual purpose breeds namely, Krishna Valley and Deoni and draft breeds namely Amrithmahal, Hallikar and Khillar. Out of the seven districts covered under the study, four districts viz. Vijayapura, Bagalakote, Gadag and Raichur (River Krishna belt) have breeding tract for Krishna Valley (dual purpose) breed while Kalaburgi and Yadagiri districts have breeding tract for Deoni breed, another dual purpose breed. In case of draft breed, Kalaburgi, Yadagiri, Vijayapura, Bagalakote and Gadag districts have the breeding tract for Khillar breed of indigenous cattle. The breeding tract/district-wise and breed-wise details of semen doses utilized during the four year period (2011-12 to 2014-15) as also their respective share in the total semen used are furnished in the Table No.21.

**Table 21: Breeding tract wise and breed-wise details of semen doses utilized (2011-12 to 2014-15)**

Breeding tract	Total doses	Kalaburgi		Yadagiri		Bagalakote		Gadag		Total	
		Doses	%	Doses	%	Doses	%	Doses	%	Doses	%
Khillar	17319	3040	18	1386	8	5012	29	906	5	10344	60
Deoni	572	510	89	57	10	0		0		567	99
Breeding tract	Total doses	Vijayapura		Raichur		Bagalakote		Gadag		Total	
		Doses	%	Doses	%	Doses	%	Doses	%	Doses	%
K Valley	1148	68	6	91	8	870	76	110	10	1139	99

It will be seen from the table that Khillar breed (draft purpose) is the most preferred indigenous breed whose semen is used by all the centers from the seven districts. The share of Khillar

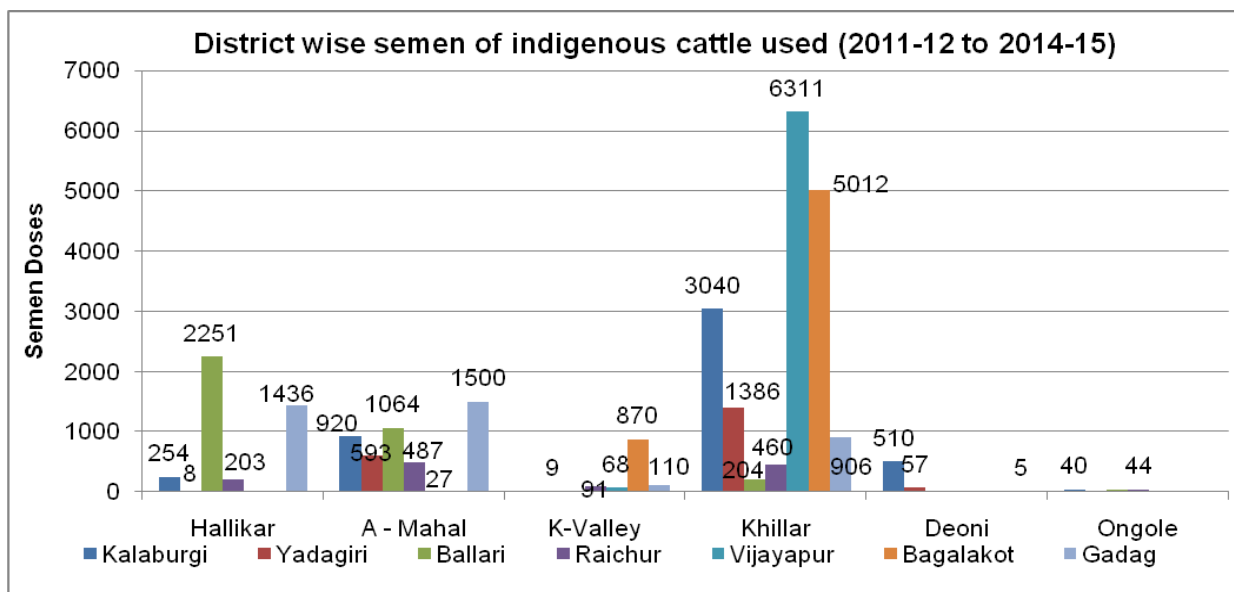
breed in the total semen used of all species/breeds is 20.97% and amongst the indigenous cattle breeds, out of the 27,908 semen doses used, 62.06% doses (17,319) were of Khillar breed. In its breeding tracts (Kalaburgi, Yadagiri, Bagalakote and Gadag), the share of Khillar semen is 60%. The breeding tract of Deoni breed is Kalaburgi and Yadagiri districts. The semen of Deoni breed was used mostly in these two districts. The total semen doses of Deoni breed used are 572. Out of this, 99% of the semen doses (567) were used in these two districts, the breeding tract for Deoni breed. The remaining five doses were used in Hullura center in Gadag district. The breeding tract of Krishna Valley breed is Vijayapura, Raichur, Bagalakote and Gadag districts. The semen of Krishna valley breed was used mostly in these four districts. The total semen doses of Krishna Valley breed used are 1148. Out of this, 99% of the semen doses (1139) were used in these four districts, the breeding tract for Krishna Valley breed. The remaining nine doses were used in Marakal Kollura center in Yadagiri district. The farmers have their own choice regarding use of semen of a particular breed. His / her choice is influenced by a purpose. The farmer who is interested in only milk production will choose exotic / cross bred semen or semen of indigenous milch breed. When the farmer is interested in draught animals, he will go in for draught breeds. The availability of physical (land, water, space, manpower, marketing etc.) and financial resources with the farmers also influences selection of breed for AI. The more resourceful farmers usually choose exotic / crossbred semen while other farmers are comfortable with use of indigenous cattle, either dual or draught purpose. The most important characteristics i.e lactation yield in respect of different breeds is discussed in the subsequent paragraph 5.5.5.

In case of indigenous cattle breeds, the details of districts wise no. of semen doses used during the four year period (2011-12 to 2014-15) are furnished in Table No.22 and graphically represented in Figure No.3.

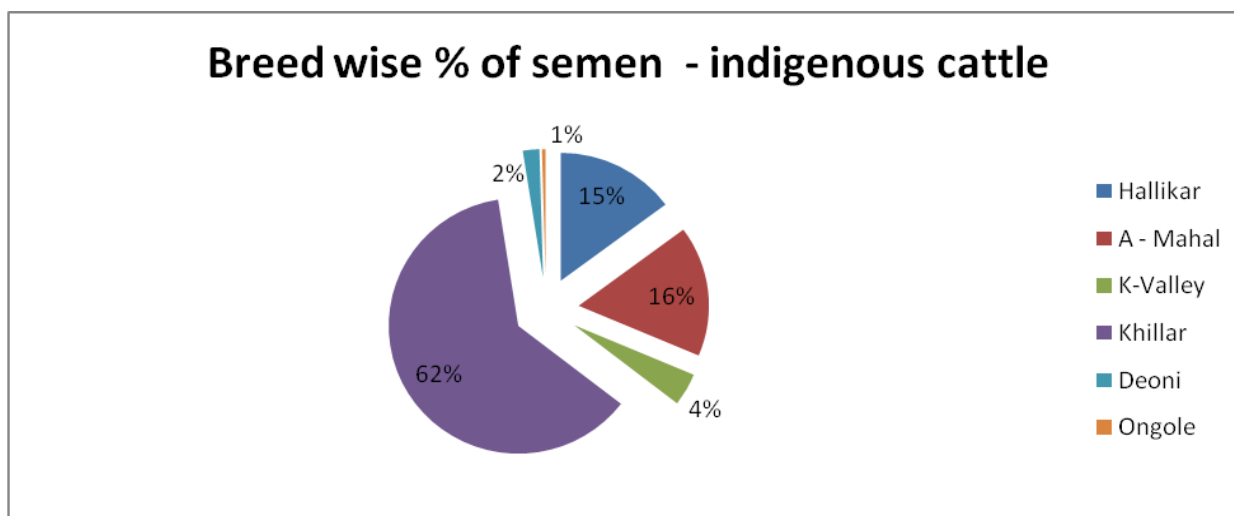
**Table 22: Breed wise and District wise semen doses of indigenous cattle breeds**

District	Hallikar	A - Mahal	K-Valley	Khillar	Deoni	Ongole	Total
Kalaburgi	254	920	0	3040	510	40	4764
Yadagiri	8	593	9	1386	57	0	2053
Ballari	2251	1064	0	204	0	42	3561
Raichur	203	487	91	460	0	44	1285
Vijayapur	0	27	68	6311	0	0	6406
Bagalakot	0	0	870	5012	0	0	5882
Gadag	1436	1500	110	906	5	0	3957

District	Hallikar	A - Mahal	K-Valley	Khillar	Deoni	Ongole	Total
<b>Grand Total</b>	<b>4152</b>	<b>4591</b>	<b>1148</b>	<b>17319</b>	<b>572</b>	<b>126</b>	<b>27908</b>
<b>%</b>	<b>14.88</b>	<b>16.45</b>	<b>4.11</b>	<b>62.06</b>	<b>2.05</b>	<b>0.45</b>	<b>100.00</b>



**Figure 3: District-wise usage of semen of Indigenous cattle**



**Figure 4: Breed-wise semen of indigenous cattle used**

The position of usage of semen of different breeds in different districts that emerges from the above Table No. 18 is as under:

- I. Khillar- Semen of Khillar breed used in all seven districts of the state (highest in Vijayapura)
- II. Deoni- Usage in Kalaburgi, the highest followed by Yadagiri and Gadag is the lowest (0.01%)
- III. Ongole – Usage in three districts viz. Kalaburgi, Yadagiri and Raichur (almost 1/3<sup>rd</sup> share).
- IV. Hallikar – No usage in Vijayapur and Bagalakote. Highest in Ballari district (54% of total).
- V. Krishna Valley - No usage in Kalaburgi and Ballari. Highest in Bagalakote district (76%).
- VI. Amrit Mahal- No usage in Bagalakote. Highest (33%) in Gadag followed by Ballari (23%).

Incidentally, it is natural that the breeding policy doesn't indicate any area specific quantitative share of a semen of a particular breed.

b. The breeding policy envisages selective breeding of indigenous cattle breed for milk and draft and cross breeding of non descript cattle with exotic dairy breeds like HF and Jersey and limiting the exotic inheritance to around 50% in crossbreds. Hence, use of crossbreds under field conditions (farmers' herds) is to be encouraged at large with a view to maintaining exotic inheritance at 50-75%. In areas possessing adequate healthcare and management facilities along with well defined breeding regimes (inter-se mating and selection) exotic inheritance may be increased beyond 50%. To stabilize the level of exotic inheritance at 50%, inter-se mating among F1s is to be followed. The jersey breed should be considered as the breed of choice in all other districts where use of HF semen is not advisable on account of inadequate healthcare and management facilities as also absence of congenial environment. Backcrossing of upgraded animals with indigenous milch animals may be advocated to maintain exotic level of inheritance. Exotic inheritance to be stabilized around 50% in all districts. However, it can be maintained beyond 50% in milk shed areas and townships.

c. In case of buffaloes, the policy envisages suitable selective breeding among buffalo breeds for milk and upgrading of non descript and low producing buffaloes with Murrah bulls.

d. The HF breed to be considered as breed of choice for producing more milk in and around townships or cities wherever adequate health care and management facilities are available and where there is congenial environment.

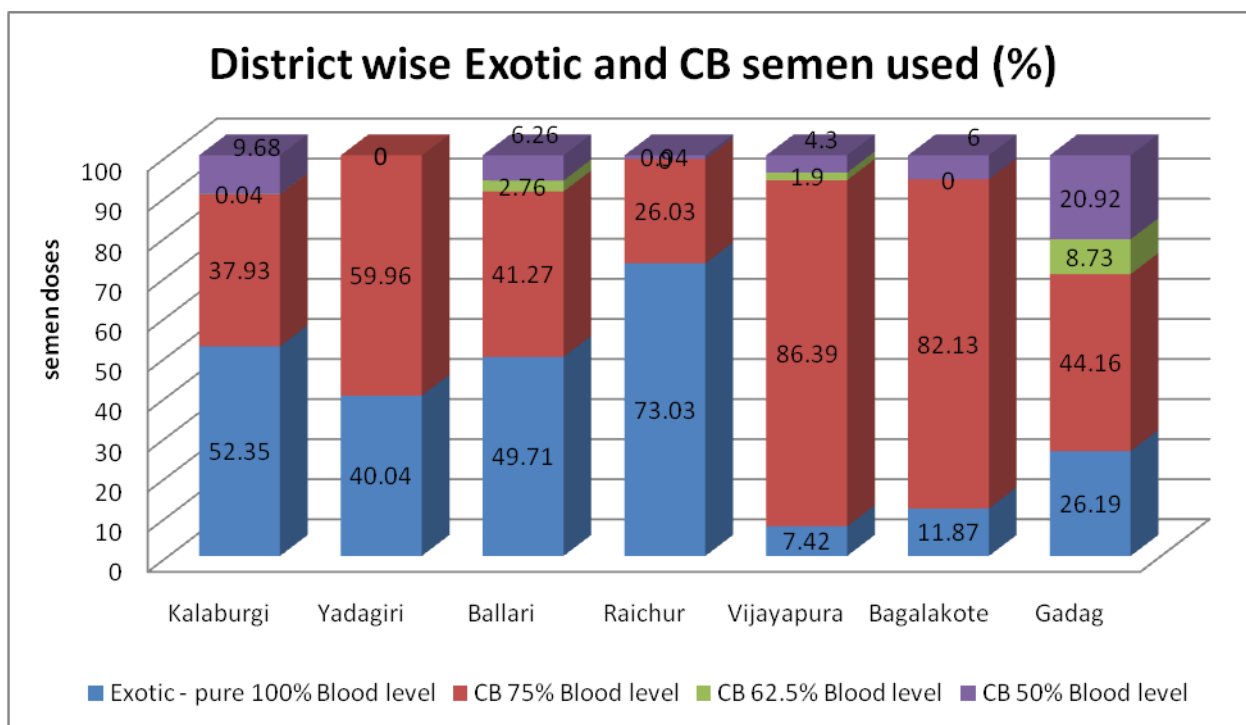
e. The Murrah breed inheritance may be propagated in those areas wherein care, management, healthcare facilities along with congenial environment exists. The Surti breed is to be the breed of choice over Murrah in all districts of the state. The share of Murrah and Surti semen in the total semen used is 38.79%. Out of the total semen doses of 82,591 the semen doses of Murrah and Surti are 20,298 and 11,753, respectively. In case of Jafrabadi, 13 doses (0.01% of total) of semen were used in one of the centers viz. Kadampura in Gadag district.

**5.5.2** The exotic/crossbred cattle breeds whose semen is used in AI include Holstein Friesian (HF), Jersey (Blood level ranging from 50-100%). In case of indigenous cattle, the semen of Khillar, Amrit Mahal, Hallikar, Krishna Valley, Deoni and Ongole breeds is used. While in case of buffaloes the semen of Surti, Murrah and Jafrabadi is used. (The Jafrabadi semen was used only in one of the centers namely Kadampura of Gadag district and that too only 13 doses i.e. 0.01% of the total semen used by all the centers).

**5.5.3** During the four year period (2011-12 to 2014-15), out of the total semen doses used (82,591), the share of buffalo bull semen was the highest at 38.80% (Murrah-24.58%, Surti-14.28 % and Jafrabadi-0.01%) followed by indigenous cattle breed with 33.79% share (Khillar-20.97%, Amrit Mahal-5.56%, Hallikar-5.03%, Krishna Valley-1.39%, Deoni-0.69% and Ongole-0.15%, respectively) while the share of exotic and crossbred cattle taken together was 27.42% (HF-16.27% and Jersey 11.15%). The district wise details no. of semen doses of various blood levels in respect of these two exotic/crossbred cattle breeds taken together and their respective share in total semen used in the district are furnished in Table No.23 and graphically represented in Figure No. 5.

**Table 23: District-wise details of exotic and crossbred cattle semen used**

District	Exotic - pure		CB 75%		CB 62.5%		CB 50%		Exotic & CB	
	No.	%	No.	%	No.	%	No.	%	No.	%
Kalaburgi	1282	52.35	929	37.93	1	0.04	237	9.68	2449	100.00
Yadagiri	179	40.04	268	59.96	0	0	0	0	447	100.00
Ballari	4629	49.71	3843	41.27	257	2.76	583	6.26	9312	100.00
Raichur	390	73.03	139	26.03	0	0	5	0.94	534	100.00
Vijayapura	176	7.42	2050	86.39	45	1.90	102	4.30	2373	100.00
Bagalakote	356	11.87	2463	82.13	0	0	180	6.00	2999	100.00
Gadag	1188	26.19	2003	44.16	396	8.73	949	20.92	4536	100.00
<b>Total</b>	<b>8200</b>	<b>36.20</b>	<b>11695</b>	<b>51.63</b>	<b>699</b>	<b>3.09</b>	<b>2056</b>	<b>9.08</b>	<b>22650</b>	<b>100.00</b>



**Figure 5: District-wise Exotic and CB semen used**

**11.5.4** In terms of the Government Order (GO) No. 1 dated 03.03.2011 GOK formulated the Karnataka Cattle and Buffalo Breeding Policy (as amended in 2011). As per this policy and as per GO No.27 dated 26.03.2011 it was ordered (a) To restrict exotic level of inheritance in cattle to around 50%, (b) Pure local breed cattle should not be crossed with other breeds to conserve local breed cattle, (c) Exotic semen may be used to upgrade non-descript (ND) cattle, (d) local non descript animals may be crossed with local breeds of other state to increase milk production.

**11.5.5** Subsequently as per GO No. AHF 44 AHP 2015 dated 24.02.2015, an expert committee was formed to give their recommendations for the conservation of local breeds and also revision of Breeding Policy.

Based on the report of the Expert Committee, the Karnataka Cattle and Buffalo Breeding Policy 2010 was revised and suitable GO dated 21.05.2015 (reference No. AHF 44 AHP 2015) was issued. The salient features are as under:

- a. The indigenous cattle breed such as Deoni, Hallikar, Amrith Mahal, Malnad Gidda, Khillari and Krishna Valley and buffalo breeds like Pandarpuri and Dharwari which are available in the state were categorized as local while those breeds such as Sahiwal, Tharaparkar and Ongole in cattle and Surti and Murrah in buffaloes which are available in other states of the country were categorized as outside breeds.
- b. Local descript indigenous breeds having high milk yield and those with excellent draft abilities shall be upgraded in their respective breeding tracts through straight or selective breeding only. They shall not be crossed with other breeds.
- c. Only local non-descript cattle can be upgraded through cross breeding with high yielding breeds in the following order of priority.
  - I. Local descript indigenous breeds in their breeding tracts
  - II. Outside indigenous descript breeds with proven lactation yield which are higher than the yields of local indigenous descript breeds
  - III. Exotic breeds like HF and Jersey, subject to the condition that the exotic level shall be maintained at 50%.
- d. The indigenous breeds are to be given priority over the exotic breeds as indigenous breeds are easier to maintain, more disease resistance, better suited for local environment and survive in local input conditions as well. The indigenous breeds are found to be the preferred choice of especially those farmers who are involved in small size dairies run by their own family labour.
- e.
  - I. Back crossing to the exotic breeds for maintaining 50% exotic level should be avoided but back crossing with high yielding indigenous cattle semen can be undertaken.
  - II. For maintaining exotic level at 50% inter-se mating of the cross breed cattle should be undertaken with crossbred semen only, so as to maintain exotic level of 50%.
  - III. Those crossbred cows which have an exotic level of more than 50% should be avoided for backcrossing. Rather, such cows shall be inseminated with CB semen of 50% exotic level so that over a number of generations, the exotic level would come closer and closer to 50%.
  - IV. For Inter-se mating it has to be ensured that the progeny should also be inseminated with semen of same gene pool mix which was used for insemination of its mother. For example, if a CB HF cow is inseminated with HF Sahiwal CB semen, then the progeny

of such cow should also be inseminated with semen of HF Shahiwal CB only. This will ensure that mosaic breeds are not produced.

- f. The Holstein Friesian (HF) breed may be propagated in districts where the dairy farmers have provision for adequate feed/fodder, water and temperature management-especially the commercial dairy farmers. Similarly the Murrah breed may be propagated in districts where the dairy farmers have sufficient provision for feed/fodder and water.

The lactation milk yield (Kg) in respect of different breeds has been indicated in Annexure 1 to Govt Order No. AHF 44 AHP 2015 dated 20.05.2015. The details are given below:

Species/category	Breed	Utility	Yield (Kg)	Range
A.Cattle				
a.Indigenous local	1. Deoni	Duel	1120.50±62.89	636 – 1890
	2. Amritmahal	Draught	572±24	
	3. Hallikar	Draught	542±61	227 – 1134
	4. Malnad Gidda	Milch	218.33	
	5. Khillari	Draught	384.10	240 – 515
b.Indigenous Outside	1. Sahiwal	Milch	2325.50±17.84	1600 – 2750
	2. Tharparkar	Milch	1748.76	912.60 – 214.7
	3.Gir	Milch	2110	800 – 3300
	4.Ongole	Milch	688.20±32.24	475 – 1000
c.Exotic Cattle	1. Holstein Friesian (H.F.)	Milch	6500	6000 – 7500
	2.HF (50% blood level)	Milch	2381±45	
	3.Jersey (Pure Bred)	Milch	5250	4500 – 6000
	4.Jersey (50% Blood level )	Milch	1747±66	
B. Buffaloes (Outside)	1.Murrah	Milch	1751.80	1003 – 2057
	2.Surti	Milch	1285.43	1208 - 2208

- As per the Minimum Standard Protocol (MSP), the dam's lactation yield (Kg) with reference to standards for Genetic Merit of Breeding Bulls should be as indicated in following table where, the progeny tested bulls are not available in absence of progeny testing programme.

Breed	Dam's Lactation yield (Kgs)		
	First	Best	Fat %
Pure HF	4500	5600	3.5
Pure Jersey	3000	3750	5.0
Sahiwal	2400	3000	4.0
Red Sindhi	2000	2500	4.5
Gir	2400	3000	4.5
Kankrej	2000	2500	4.5



Breed	Dam's Lactation yield (Kgs)		
	First	Best	Fat %
Tharparkar	2000	2500	4.0
Haryana	1600	2000	4.0
Rathi	1600	2000	4.0
Ongole	1100	1600	4.0
Deoni	800	1000	4.0
Khillar	380	500	4.0
Dangi	400	530	4.0
Amritmahal	400	500	4.0
HFCross- F2	4000	5000	4.0
Jersey CB- F2	2800	3500	4.5
Sunandini	2500	3000	3.5
Murrah	2400	3000	7.0
Mehsana	2400	3000	7.0
Nili Ravi	2400	3000	7.0
Jaffrabadi	2800	3500	8.0
Surti	1600	2000	7.0
Banni	2400	3000	7.0
Bhadawari	1300	1600	8.0
Pandharpuri	1300	1600	7.0

Dam's milk yield for F1 crosses will be as that of the indigenous dam's i.e. Gir, Sahiwal, Kankrej, Red Sindhi, etc.

**11.5.6** In absence of any record about history and pedigree of the dams, it is very difficult to conclusively state as to whether the AI programme implemented through BIRD-K is in conformity with breeding policy of GOK or not. However, based on the analysis of the data collected and compiled on semen supply and utilization vis-à-vis observations during the field visits, no deviations by and large was observed in regard to various points (listed above) pertaining to breeding policy at field level. Under field conditions, especially with farmers' herds, no breeding records or records on level of exotic inheritance are available. However, during the field visits no crossbred progeny of cattle exceeding 75% exotic inheritance was observed. There is a need to educate the AI Technicians to follow a well defined breeding regime so that the exotic inheritance is maintained at the desired level.

**11.5.7** So far as implementation of GOK breeding policy by BIRD-K in the above districts is concerned, heavy use of Murrah breed semen over Surti breed, while in case of exotic/crossbreds heavy use of HF semen over Jersey breed appears to be the only grey area. Further in case of exotic crossbreds, the highest use of pure exotic semen (100%) as also crossbred semen with 75% and 62% blood level amongst the respective breeds is rather a matter of concern. The district wise details of aggregate no. of semen doses used (species/category wise) are furnished in the Table No.24

**Table 24: District-wise details of aggregate no. of semen doses used**

Sl.no	District	Exotic & CB cattle			Indigeno us cattle	Buffaloes			Dist Total
		Jersey	HF	Total		Murrah	Surti	Total	
1	Kalaburgi	1087	1362	2449	4764	2060	943	3003	10216
2	Yadagiri	149	298	447	2053	1572	1026	2598	5098
3	Ballari	3783	5529	9312	3561	2472	1521	3993	16866
4	Raichur	309	225	534	1285	1403	965	2368	4187
5	Vijayapur	372	2001	2373	6406	6412	1196	7608	16387
6	Bagalakot	824	2175	2999	5882	3740	3332	7072	15953
7	Gadag	2689	1847	4536	3957	2639	2752	5391	13884
	<b>Grand Total</b>	<b>9213</b>	<b>13437</b>	<b>22650</b>	<b>27908</b>	<b>20298</b>	<b>11735</b>	<b>32033</b>	<b>82591</b>
	<b>%</b>	<b>11.15</b>	<b>16.27</b>	<b>27.42</b>	<b>33.79</b>	<b>24.58</b>	<b>14.21</b>	<b>38.79</b>	<b>100.00</b>

**11.5.8** The KMF Centers do not have Semen supply of indigenous breeds of cattle as also Surti breed of buffalo. They use semen of pure H.F. and Jersey as also their half crosses (50% blood level). In case of buffaloes, only semen from Murrah bulls is available. The use of only H.F. and Jersey bull semen of exotic/crossbred cattle and Murrah buffalo could be mainly due to the production and supply of semen by the Nandini Sperm Station, a unit of KMF. On an average, the usage of Jersey semen is the lowest at 23% while that of H.F. and Murrah is around 45% and 32%, respectively.

**11.5.9** The data on use of semen by DAH & VS were not available for Gadag district. In the remaining six districts, the semen of exotic cattle and their crosses (75% blood level), indigenous cattle (Amrit Mahal, Khillar and Deoni) and buffalo bull semen (Surti and Murrah) was used. During the five year period (2010-11 to 2014-15), the ratio of use of

indigenous cattle and exotic/ crossbred cattle was about 1:1.7 while within the exotic cattle the ratio of Jersey and H.F. breed was 1:2.6. Among the indigenous cattle breeds the major shares (96%) was that of Khillar breed followed by Deoni (3%) and Amrit Mahal (1%). In case of buffaloes the use of semen of Surti and Murrah breed was in the ratio of 1:1.1.

**11.5.10** The private commercial AI workers use semen of exotic cattle i.e. Jersey and H.F. pure and their crosses (50-75% blood level), indigenous cattle (Hallikar, Amrit Mahal, Gir etc.) and buffaloes (Surti and Murrah).

## **11.6. Service charges for AI.**

**11.6.1** The BIRD-K collects the service charges @ Rs 15 per AI as per the MoU and deposits the same to the GOK.

**11.6.2** The AI Service charges recovered from farmers of dairy cooperative societies who availed the services of KMF AI centres are not at all uniform and vary widely. Some societies do not prescribe any specific rate and leave it to the AI workers and farmers as to what should be the charges. This is particularly applicable for those KMF AI workers who provide services to non-member farmers from villages located far off from the society HQ. In general, the charges required to be paid by the farmers' range from Rs. 0-100/service. For door step service extra charges are required to be paid by the farmers. The AI workers gets in the range of Rs. 5-100/service and is required to remit to the society/KMF 50-100 per cent of total service charges paid by the farmers. Where no service charges are recovered from the farmers, the society, compensates the AI workers suitably by paying some service charge per AI done by him/her.

**11.6.3** The DAH & VS recovers Rs.15/- per AI and the amount is deposited with the State Government.

**11.6.4** The private AI workers charge between Rs.100 to Rs.130 per AI for the service rendered within 10 km distance. Beyond 10 km distance, extra charges ranging from Rs.20 to 30 per AI are levied/recovered.

## **11.7. Breeding performance (Karnataka vis-à-vis other states)**

**11.7.1** Government of India (GOI), Department of Animal Husbandry and dairying (DAH&D) and NABARD Consultancy services (Nabcons), Mumbai had organized a national seminar for

implementation of National Project on Cattle and Buffalo Breeding (NPCBB). As per the key note address delivered by the Joint Secretary, DAH&D, the conception rate in developed countries is more than 50% (< 2 straws per conception) which indicates that the conception rate is less than 50% at all India level and the conception rate/percentage in the country ranges from 20-45% (>2 straws per conception to 5 straws per conception).

**11.7.2** The targets fixed for services per conception in Karnataka State are based on conception to service at 0.40. The overall conception to service 0.43 in case of BIRD-K centres which is 7.5% higher than the stipulation. This compares well with the standards of GOK as also other states and the difference was found to be statistically non significant at 5% level of significance.

**11.7.3** With reference to the targets fixed at State level by GoK, calving to conception ratio is 0.625. As against this, in case of BIRD-K centres the calving to conception ratio for BIRD-K works out to 0.571. The difference is however, found to be statistically non significant at 5% level of significance.

## **11.8 Variation in Achievement from District to District**

**11.8.1** The breeding performance depends on many factors. However, the major factors which adversely affect the performance can be categorized under three heads namely, environmental factors, absence of good recording system and timing of insemination in relation to oestrus. The other factors associated with the animal are management, nutrition, genetic, stress etc. Above all, the skill of the inseminator is the most important factor which can result into good performance or otherwise. The achievements in terms of conception rates in Kalaburgi District have been lowest among all the north Karnataka Districts whereas in Bagalkote the same are consistently and significantly at the top. It was gathered during field visit that the farmers in Kalaburgi are more inclined to earn their livelihood from sources other than livestock. Hence, the farmers do not quite depend on supplementary source of income in the form of dairy farming. As such livestock is not subsistence part/livelihood means for the farmers and agricultural labourers in Kalaburgi district. In view of this, there appears to be some negligence on the part of farmers in taking care of their dairy animals to the extent desired. The success rate for confirmed pregnancies to service has negative correlation with negligence and hence, poor management is the first reason for low success rate. Major part of Bagalkote district has

better provision for feed and fodder resource due to available irrigation water as compared to Kalaburgi district. Further, the awareness level of farmers in Bagalakote district is higher as compared to Kalaburgi district. Thus, in Bagalkote district better congenial environment exists for breeding programme. Environmental factors like temperature, wind velocity, humidity, rainfall etc. result into stress (internal and external stimulus) leading to alteration of endocrine profile which could adversely affect the performance. The management problems influence success rate up to 95%. Moreover, the success rate issues within dairy herds can be subtle and complex although there is great potential/scope for improvement in success rate over time through farmer and AI technician partnership. The diagnosis is more inclined to skill and intelligence than its methodical aspects. This calls for regular and keen interest and dedication of both the farmer and AI technician. There is also a need to maintain proper, simple, reliable and permanent record of all animals. In Kalaburgi district, six centers from six Taluks while, in case of Bagalkote district three centers from three Taluks were covered under the study. All the 6 centers in Kalaburgi district are from most backward Taluks of the state whereas only one Taluk from Bagalkote is most backward and the remaining two are more backward. Further as per Dr. Nanjundappa committee report, the Comprehensive Composite Development Index (CCDI) of five Taluks from Kalaburgi districts ranged from 0.57 to 0.65 whereas in case of Bagalkote it ranged from 0.77 to 0.85. Among the three Taluks from Bagalakote district, the Bilagi Taluk has the lowest CCDI at 0.77. Still CCDI of Bilagi Taluk is higher by 0.12 to 0.21 as compared to all the Taluks from Kalaburgi district. Taluk wise comparative position of CCDI as per Dr. Nanjundappa committee are furnished in Table No. 25

**Table 25: Taluk -wise CCDI of Dr. Nanjundappa Committee in Kalaburgi and Bagalakote district.**

Bagalakote District			Kalaburgi District (All Taluks most Backward)		
Taluk	CCDI	Group	Taluk	CCDI	Bilagi Taluk CCDI higher by
Bilagi	0.77	Most	Jewargi and Chincholi	0.57	0.20
Badami	0.82	More	Alanda	0.61	0.21
Hunagunda	0.85	More	Afzalpur (2 centers)	0.62	0.15
			Chittapura	0.65	0.12

**11.8.2** The major limiting factor for success of AI has been detection of heat (oestrus). The correct detection of heat is vitally important and will help if and when insemination should

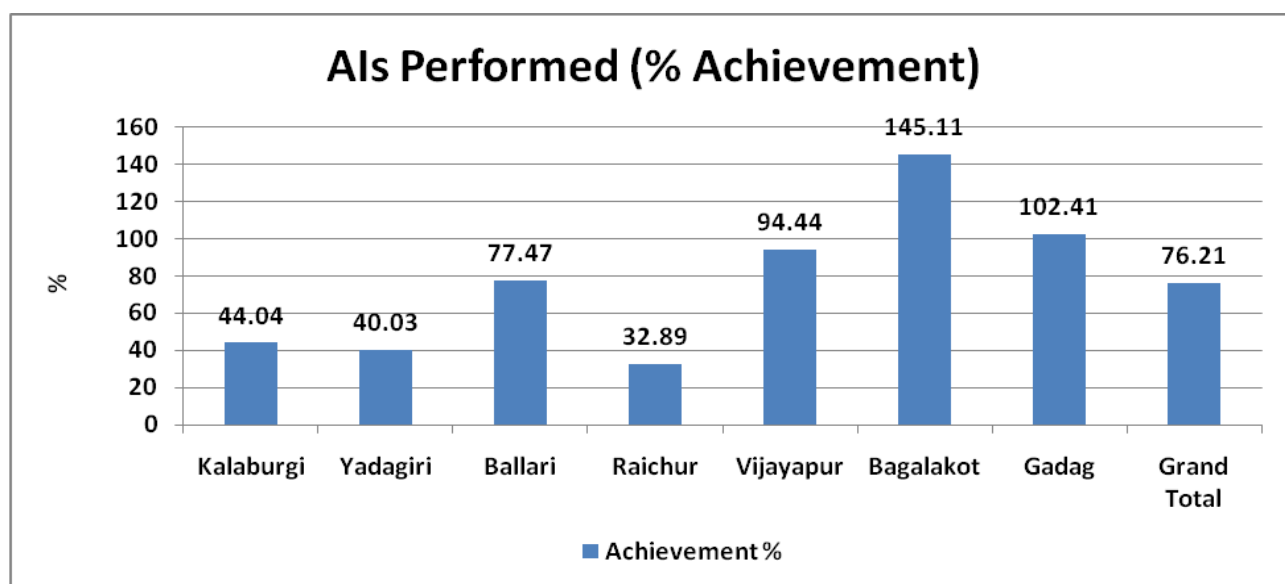
occur while incorrect /inefficient detection of heat may lead to unreliable decision to breed. Numerous factors, environmental and managerial and cow related play a role in oestrus expression and detection. There is a need to hold fertility camps to detect cow related problems and treat them appropriately on one hand and give orientation training to farmers about proper heat detection vis-à-vis time of insemination after the cow is observed in standing heat. The biological events associated with timing of insemination indicate that best results are obtained, if the animals are inseminated between eight to twelve hours after the onset of oestrus.

**11.8.3** BIRD-K has been undertaking a good number of promotional programmes and extension activities. The activities which may have direct bearing on success are village meeting, fixed visits to villages, fodder development, AI and PD camps, exhibitions, infertility camps, mineral mixture supplementation, screening camps and their follow up, health camps, training of farmers including special training etc. For animal health camps and screening camps collaboration with DAH&VS would be advisable while other activities can be taken up by the center independently. The progress in this regard is not quite good except Ballari district. In Bagalakot and Gadag district not a single village meeting was convened in last four years. In Vijayapura, out of the five Taluks, one meeting each was convened during the four year period, while no meeting was convened in remaining three Taluks. The centers are participating in vaccination camps regularly. There is a need to allot target for individual activity which should be undertaken at prescribed interval (weekly, monthly, quarterly, half yearly and yearly) depending on the nature of activity. The activities like calf rallies, deworming camps, exhibitions etc. are also conducive for overall development of the AI programme in the area. In Ballari, Raichur and Gadag districts deworming camps were held regularly during the four year period, in other districts this activity as also other activities were not taken up.

**11.8.4** The details of quantitative (no. of AI performed up to March 2015 since inception) and qualitative performance vis-à-vis ranking of the district is furnished in the Table No.26

**Table 26: District -wise quantitative and qualitative performance vis-à-vis ranking.**

Districts	Quantitative performance				Qualitative performance			
	Target	AI Done	% Achievement	Rank	Coception to Service	Conception %	Services/ conception	Rank
Bagalakot	8,020	11,638	145.11	I	0.40	40	2.49	V
Gadag	7,310	7,486	102.41	II	0.39	39	2.58	VI
Vijayapur	11,710	11,059	94.44	III	0.44	44	2.25	III
Ballari	11,710	9,072	77.47	IV	0.45	45	2.2	II
Kalaburgi	13,910	6,126	44.04	V	0.43	43	2.35	IV
Yadagiri	6,600	2,642	40.03	VI	0.49	49	2.03	I
Raichur	6,600	2,171	32.89	VII	0.34	34	2.94	VII
<b>Grand Total</b>	<b>65,860</b>	<b>50,194</b>	<b>76.21</b>		<b>0.43</b>	<b>43</b>	<b>2.35</b>	



**Figure 6: Achievement against Target-AIs performed**

**11.8.5** It can be seen that in terms of quantitative performance (AI performed up to 31.03.2015 since inception), the overall achievement in this regard is 76%, Bagalkote being at the top with 145% achievement followed by Gadag (102%). While the performance of Vijayapura (94%) and Ballari (77%) has been above the average, the performance of Kalaburgi (44%), Yadagiri (40%) and Raichur (33%) is far below the average of 76%. In qualitative terms (services per conception), the performance of Yadagiri (2.03), Ballari (2.20) and Vijayapura (2.22) is above average while Kalaburgi the performance at 2.35 is equal to overall average. The performance

of Bagalakote (2.49), Gadag (2.58) and Raichur (2.94) is below average. The performance in Raichur district is the lowest both in terms of quantity and quality.

### **11.9 Management Information System (MIS)**

**11.9.1** The BIRD-K has been submitting the prescribed reports to GoK as per the prescribed periodicity.

**11.9.2** The report lacks mathematical accuracy in respect of sub totals and grand totals both horizontally and vertically.

**11.9.3** There appears to be lack of desk monitoring as reports are not filled in completely and also not written in legible hand writing.

**11.9.4** The existing system is not at all user friendly so far as qualitative assessment of the programme is concern and does't afford access to data/information knowing qualitative results.

### **11.10 Monitoring Performance of BIRD-K Centers by GoK at District level**

The monitoring of the performance of BIRD-K Centers by DAH&VS was not uniform and regular at different levels in the district. The conceptions and calvings are not verified by the AD/DD at regular intervals. However, wherever such verification is done, in stray cases/on random basis the reports are sent to higher authorities for necessary action. In Raichur district, no verification/follow up was done by DAH&VS during the four year period (2011-2012 to 2014-15).

### **11.11. District level review committee meeting (till the end of 31<sup>st</sup> March 2015)**

**11.11.1** As per the information provided by BIRD-K, the first meeting after commencement of the programme was held in Kalaburgi district on 11.09.2013 (2013-14). In Ballari, Bagalakote, Vijayapura, Yadagiri and Gadag districts, one meeting each was held during the year 2014-2015 while in Raichur district one meeting was held on 17.10.2015 (2015-16). In case of Kalaburgi district, the second meeting was held on 16.03.2015 (2014-15). The details about agenda items recommendations, gist of discussions, decision taken are as under:



Meeting details	Gist of discussions/Decisions taken/Recommendations
District: <b>Kalaburgi</b> Year 2013-14 Date 11.09.2013 Chaired by CEO ZP	The committee agreed to shift centers, one each located in Chincholi, Chitthapur and two in Sedam Taluk i.e. Chitthapur to Kalaburgi and other three to Afzalpura
District: <b>Ballari</b> Year 2014-15 Date 14.07.2014 Chaired by CEO ZP	Considering No. of villages, breedable population, mining area and operation of one veterinary center-Narasingapura center of BIRD-K in Sandur Taluk was agreed to be shifted to Devaramallapura (Sandur tq)
District: <b>Yadagiri</b> Year 2014-15 Date 30.09.2014 Chaired by CEO ZP	It was approved for shifting of two centers of BIRD-K viz. Paspool and Badiyal centers of Yadagiri taluk to Naganatagi and Kuragunda in Shahapura taluk.
District: <b>Gadag</b> Year 2014-15 Date 14.01.2015 Chaired by CEO ZP	The DDAH&VS informed that 1. All the seven centers are providing good service to 57 villages. 2. They have achieved the targets 3. Providing good and satisfactory service to produce good breed of animals 4. There are indications of increase in milk yield. 5. Service is essential for more farmers. 6. Centers to continue.
District: <b>Vijayapura</b> Year 2014-15 Date 12.02.2015 Chaired by CEO ZP	The DDAH&VS informed that 1. The centers are providing good service to 42 villages. 2. They have achieved the targets 3. They are providing good and satisfactory service with reference to No. of AI, conceptions and calves born.
District: <b>Bagalkote</b> Year 2014-15 Date 04.03.2015 Chaired by CEO ZP	a. The committee expressed satisfaction about the service provided by the nine centers to 283 villages. b. The AI charges are received every month by DAH&VS.
District: <b>Kalaburgi</b> Year 2014-15 Date 16.03.2015 Chaired by CEO ZP	a. It was approved for shifting of two centers viz. Kudahalli and Anawara of Chincholi Taluk to Sakkaragi and Jawali of Aland Taluk.
District: <b>Raichur</b> Year 2015-16 Date 17.10.2015 Chaired by CEO ZP	a. BIRD-K to submit proposal/request for continuation of AI centers up to March 2016 undertaking not to put financial burden on Government due to this, and also to submit proposal for continuation of beyond 2016 as the farmers are in need of AI service. b. Relocation of three centers viz. Gugal to Madharakal (Devadurga Taluk), Ayanur to Gonavara (Sindhnur Taluk) and Kondihal to Sajjalagudda (Lingasugur). c. Through AI service, 12000 calves are born, the notional value of which can be estimated at Rs 12 crores. d. Assets worth 15 crores have been created through milk production vis-à-vis establishment of milk collection centers.

**11.11.2** The MoU between BIRD-K and GoK for implementation of the programme was executed on 20<sup>th</sup> Sept 2010. The BIRD-K commenced its operations from 2<sup>nd</sup> January 2011 (i.e. last quarter of 2010-11) in a phased manner by opening centers one by one in the respective districts. The details of district-wise number of review committee meetings required to be convened vis-à-vis meeting/s actually held from the commencement of the operations by BIRD-K up to the end of third quarter (ending 31<sup>st</sup> Dec 2015) of the year 2015-16 are as under.

Sl.No.	Year and quarter of commencement of operations.	Districts covered	Meetings to be convened
1.	Fourth/last quarter of the year 2010-11	1. Bagalakote, 2. Ballari, 3. Vijayapura, 4. Raichur, 5. Kalaburgi, and 6. Gadag	24
2.	Second quarter of 2010-11	1. Yadagiri	23
	<b>Total for seven districts</b>		<b>47</b>

As against the requirement of 23 meetings in Yadagiri Districts and 24 meetings in each of the remaining six districts only one meeting each was held except Kalaburgi where two meetings were held.

### **11.12. State level Review committee meeting (up to 18<sup>th</sup> September 2015).**

**11.12.1** The state level review committee meetings were not held during the years 2010-11 and 2011-12 as also during the years 2013-14. Two meetings each were held during the years 2012-13 and 2014-15, respectively. During 2015-16 (upto 18<sup>th</sup> September 2015), three meetings were held. No proceedings of the meeting, if any, held before 10.04.2012 was made available to study team. Hence, the meeting held on 10.04.2012 is considered/construed as the first state level review committee meeting after commencement of the scheme in 2010-11 (This meeting was presided over by the chairman of the committee viz. Additional Chief Secretary and Development Commissioner). All other subsequent meetings were chaired by the members of the committee (Principal Secretary, DAH&F-23.01.2013, Director AH&VS-21.07.2014, Secretary, DAH&F-07.11.2014 and 02.06.2015). The details about agenda points, recommendations, gist of discussions, decision taken are as under:

Meeting details	Gist of discussions/Decisions taken/Recommendations
Year 12-13 Date 10.04.2012 Chaired by (ACS&DC)	The programme should continue even if the progress is low considering backwardness and breedable population in these center areas.
Year 12-13 Date 23.01.2013 Chaired by Principal secretary DAH&F	<ul style="list-style-type: none"> <li>a. The centers achieving low progress (due to less population, location in hilly and mining regions, less number of villages and duplication of centers) to be shifted.</li> <li>b. Targets to be streamlined with reference to breedable population e.g. 2000 conceptions and/or 1250 calvings for centers having 2000-3000 breedable populations and 1500 conceptions and/or 900 calvings for centers having 1000-1999 breedable population.</li> </ul>
Year 14-15 Date 21.07.2014 Chaired by Principal secretary DAH&F	<ul style="list-style-type: none"> <li>a. BIRD-K to submit details of 1. Breedable population in the jurisdiction of each center. 2. Feedback from farmers who attended awareness programme and 3. No. of AI per conception.</li> </ul>
Year 14-15 Date 07.11.2014 Chaired by Director, Secretary, DAH&F	<ul style="list-style-type: none"> <li>a. BIRD-K to submit correct details of targets and achievements (Kalaburgi, Bagalkaote and Ballari.)</li> <li>b. BIRD-K to avoid duplication of AI in centers jurisdiction as KMF centers are also in operation.</li> </ul>
Year 15-16 (up to 18 Sept 2015) Date 30.04.2015 Chaired by Secretary, DAH&F	<ul style="list-style-type: none"> <li>a. KMF to provide AI services through their centers as per Karnataka state breeding policy</li> <li>b. All the district milk unions, private AI volunteers as well as semi-technical staff of the Department to be involved in extending good and efficient AI services.</li> <li>c. The model of privatization of AI services to be extended to other districts based on the experience gained from the scheme implemented in Bidar.</li> </ul>
Year 15-16 (up to 18 Sept 2015) Date 02.06.2015 Chaired by Secretary, DAH&F	<ul style="list-style-type: none"> <li>a. BIRD-K/GOK to work out cost based on item that can be supplied from the department except semen. Such items to be taken out from the scope of BAIF and should be supplied free of cost by DAH&amp;VS to BAIF.</li> <li>b. AI service charges collected by BAIF centers can be retained at their end.</li> <li>c. Commissioner to submit revised scope of work.</li> </ul>
Year 15-16 (up to 18 Sept 2015) Date 16.06.2015	<ul style="list-style-type: none"> <li>a. As per agenda, a report was to be prepared on the requirements of AI centers and AI technicians for nine districts in Northern Karnataka.</li> <li>b. DAH&amp;VS to suggest alternate arrangements to provide service.</li> </ul>

### 11.13. Cost of AI services by different agencies.

**11.13.1** The overall average cost per service including establishment expenses in respect of BIRD-K centers is Rs 282. However, the average cost per service excluding establishment cost is Rs. 45. As against this an amount of Rs 15 per service is recovered from the farmers as per the MoU between BIRD-K and GoK. The cost is worked out by taking average of AIs performed by the 28 centers during the year 2014-15 vis-à-vis average cost incurred per center. The average item wise details of cost incurred per center of BIRD-K are furnished in Table No.27.

**Table 27: Break up details of per service cost incurred by BIRD-K (reference year 2014-15)**

SL.NO.	PARTICULARS	Cost per center (Rs)
1	Office Rent	1341
2	Incentive, Salary/Retainer-Ship Fee paid to employees	127311
3	Travelling & Conveyance/ vehicle running expenses	33501
4	Semen	26803
5	LN2(Including transport charge i.e. landed cost)	13401
6	Promotional activities	4354
7	Depreciation On Cryo Cans, FS Carriers, Two Wheeler, Furniture & Fixtures Etc	13669
8	Maintenance Charges(Mobile Exp Also Included)	8040
9	Other expenses	22849
	<b>Total Expenses(A)</b>	<b>251269</b>
	Average no. of AI done per center ( 2014-15)	890
	Per Service Cost Incurred (251269/890) including establishment cost	282
	Per service cost incurred excluding establishment cost (includes semen and LN2 cost only) (40204/890)	45

**11.13.2** The per service cost incurred by DAH&VS (reference year 2013-14) is up to Rs 32. Against this, the DAH&VS recovers Rs 5 per service from the farmers. The comparison of cost incurred by DAH&VS and BIRD-K is not possible as matching figures for individual item with their break up are not available. However, a notional comparison is attempted and the details are furnished in Table No.28.

**Table 28: Break up details of per service AI cost incurred by DAH&VS & BIRD-K**

Sl.No	Particulars	DAH&VS (2013-14)			BIRD-K (2014-15)	
		Measure	Unit rate (Rs.)	Cost (Rs.)	Cost for 890 AIs (Rs)	Per AI Cost (Rs)
A	Input cost					
	a. semen	1 straw	13.50	13.50	26,803	30.12
	b. LN2	0.5 litres	14.00	7.00	13,401	15.06
	c. Sheath	1 sheath	1.00	1.00		
	d. gloves	1	1.00	1.00		
	<b>Sub total</b>			<b>22.50</b>	<b>40,204</b>	<b>45.17</b>
B	Over heads		lump sum	0.75	22,849	25.67
C	Depreciation		lump sum	8.00	13,669	15.35
D	Contingencies (Transportation & Delivery)		lump sum	0.75		
	<b>Grand Total</b>			<b>32.00</b>	<b>76,722</b>	<b>86.20</b>

**11.13.3** The data/information about per service cost incurred by KMF was not available. The individual KMF AI center recovers different charges from the farmers as per the decision of the respective society. While most of the societies provide free service to the farmers and do not recover any amount either directly or indirectly from the farmer members, some societies recover the service charges from the milk bill of their farmer members.

**11.13.4** The KMF centers receive their main AI inputs i.e. LN2 and semen from district milk unions/KMF. The charges recovered by the district milk union/KMF towards LN2 vary widely. Some societies pay a fixed charge of Rs 105 per month towards the LN2 requirement while some other societies pay on per litre basis. In case of semen, the charges recovered from the societies range between RS 22 to 24 per dose. The amounts recovered from farmers also vary. The incentive paid to AI worker of KMF center is linked to minimum no. of AIs performed per month. E.g. if minimum 30 inseminations are performed per month, he/she gets an incentive of Rs 1000 per month. Besides the incentive, he/she gets certain amount per AI service as may be fixed by the society. In some KMF centers, the AI charges are directly deducted from the milk bill of the farmer while in some other centers, the AI worker recovers the certain amount from farmers and remits the same to the society after retaining his/her share of AI charges. For cluster AI centers, the incentive is Rs 2500 per month if a minimum target

of 50 AIs is achieved. The service charges for AI are different for members and non members of the society as also stationary and doorstep AI service. The average income of a cluster AI worker ranges from Rs. 3400 to Rs. 3900 per month comprising of incentive, AI service charges and calf born (follow up) charges. Besides this, he gets incentive for milk procurement with reference to daily milk collection. The milk procurement incentive is received on per litre milk collection basis and for buffalo milk, the incentive is higher (by say 20%) over that of cow milk.

**11.13.5** The private AI worker is required to pay to BIRD-K Rs. 50 per semen dose which includes cost of LN2. He/She charges Rs. 130 per AI and Rs. 50 per pregnancy diagnosis. His/Her gross earnings per month range between Rs. 23000 to Rs. 26000 from 150 to 170 AIs per month (@ Rs 130 per service) and Rs. 70 to Rs. 80 pregnancy tests (@ Rs 50 per test). After deducting the cost towards semen (Rs. 7500 to Rs. 8500 @ Rs 50 per straw), his/her net earnings works out to Rs. 15500 to Rs. 17500 per month. His/Her other earnings of around Rs. 1000 from other services like dehorning and first aid (10 cases each @ Rs. 50 per case) takes care of his/her overheads towards petrol etc. charges.

#### **11.14. Perception of stake holders/satisfaction among user groups.**

**11.14.1** As stated elsewhere, the comments of 384 farmers have been obtained as per Para 4 of the questionnaire. As per the feedback received from farmers and centre in-charges of all the three agencies, it was observed by the evaluation team the semen was always available at all centres with adequate cold chain arrangements. As such none of the farmers reported that AI services could not be available to them on the grounds of non-availability of proper semen doses or qualified technicians.

**11.14.2** The farmers who utilized the services have good opinion about the timeliness and quality of services provided to them under the scheme. The stake holders recognized the need for such a kind of service and want the services to continue. The services rendered by BIRD-K has acceptance among farmers mainly due to reach/doorstep delivery. The farmers have appreciated the benefits derived from the scheme and have been actively participating. The BIRD-K has been successful in creating awareness among the farmers.

### 11.15. Continuation of the scheme.

**11.15.1** The scheme should be continued and expanded with mutual consent of both the parties in North Karnataka as also in other parts of Karnataka depending upon feasibility in this regard. Unless there is a better plan 'B', it may not be prudent on the part of DAH&VS to discontinue the scheme. Prima-facie, it appears that neither KMF nor DAH&VS will be able to match BIRD-K, so far, as prompt doorstep delivery of AI service is concerned. KMF has its own limitations/restrictions e.g. KMF is rather not keen on providing service to non members. On business/economic considerations, KMF's first choice/preference is to cover/reach villages/areas where adequate surplus milk is available for procurement and a functional dairy society exists. Similarly, DAH&VS is also faced with certain difficulties such as perpetual inadequate staff, mobility, funds constraints mainly due to non co-ordination of fund flow, vast area of jurisdiction thereby involving longer distances for delivery of service which is time and energy consuming, lack of infrastructure for storage of semen, LN2 vis-à-vis lack of input supply arrangements. The progress under conversion of existing stationary AI centers in to mobile centers is not encouraging. In absence of mobility/communication facilities, there is likelihood that the Department veterinarians may likely to show disinterest in providing doorstep delivery. The present logistic do not appear to permit independent operations by the state government. In fact there is a need to explore the possibility of linking veterinary services (first aid, in particular) with the AI service providers. As of now, the presence of Karnataka Livestock Development Agency (KLDA) is also not felt to the desired extent in the state in terms of doorstep AI delivery. Further, KLDA is yet to operationalize the MAITRI AI centres announced in the State budget of 2014-15. Subsequent to operationalization of MAITRI AI centres, it is understood that KLDA will serve its intended role of specialized autonomous organization managing professionally the various aspects of organized breeding programme (production, procurement, supply of genetic inputs and LN2) as envisaged for State Implementing Agency (SIA) under NPCBB/NPBB. The BAIF/BIRD-K has suitable arrangements to train manpower for sustaining extended network. The BIRD-K centers are also involved in extension activities which are complementary to AI programme. Through BIRD-K it may be possible to improve accessibility of door step delivery of AI services in areas which are out of reach of AI. It may be possible to have proper control and coordination over the operations of BIRD-K. In view of this, it can be concluded that BIRD-K model may be a better one and needs to be taken forward for successful organized breeding programme.

**11.15.2** In view of the foregoing, it will be advisable to consider exit policy in terms of sustainability of the services post exit-

### **11.16. Overlap of efforts of DAH&VS, KMF and BIRD-K**

There is no overlap of efforts of DAH&VS, KMF and BIRD-K. Such instances do not occur as there is a unwritten clear cut demarcation in the area of operations. The DAH&VS normally do not provide service wherever the services of BIRD-K or KMF are available. The area of operation of BIRD-K centers doesn't cover the villages where functional KMF dairy societies exist.

**11.16.1** Under the present data generation and reporting system, the performance against AIs performed, confirmed conceptions/pregnancies, calvings etc. is reported independently on monthly/annual (April to March) basis. These three indicators are reported independently without linking them with one another i.e. AIs performed with conception and conceptions with calving. Thus, the present system is not quite user friendly with reference to knowing the accurate/correct success rate easily and gives a mere record of quantitative performance/achievements during a particular month or year independent of each other. Besides internal causative factors indicated in the report the success rate is influenced in the instant case i.e. in respect of BIRD-K centres, in mainly in absence of/due to inability of the agency to maintain proper data and ensure 100% follow up. Further there is no proper and foolproof reporting system which will facilitate calculation of true and correct results. In view of the foregoing, there is a need to have a revised reporting system which takes into account each and every AI performed with resultant conceptions or otherwise. Similarly, each and every conception recorded should be linked to calving or otherwise. For this purpose, a separate/additional reporting system may be devised on the following lines so that such system will afford true and correct data for arriving at the success rate for conception to service and calving to conception using relevant methodology/formula

(i) Each BIRD-K centre is maintaining three registers for recording inseminations, pregnancy diagnosis results and calvings. The data in these registers is used for reporting the progress on these parameters on a monthly basis. These registers/reports are identified as LSD 1.1 (insemination register), LSD 1.2 (pregnancy diagnosis register) and 1.3 (Monthly calving report). Certain columns (such as Name and address of the owner, category of the farmer,



species, breed of the animal etc) are common/identical/same in these three reports. The AI register (LSD1.1) has provision vide columns 16-19 to record follow up results in respect of conceptions and calving (two columns i.e. date and results). However, the columns are left blank/not filled. Similarly, the columns for number of inseminations per animal are left blank and only the insemination done during the month for which the report is prepared is filled up. In case of PD register LSD 1.2, the total number of AIs are not recorded. Instead, only last date of AI is recorded.

(ii) For calculation of success rate or precisely for arriving at the correct and valid values of numerators and denominators, there is a need to have 4<sup>th</sup> register which can be suitably identified say eg. Success rate/closure register (LSD 1.4). This may be considered necessary as the existing registers namely, AI register (LSD1.1) and PD register (LSD 1.2) do not take in to account the total AIs performed.

(iii) This new register will list/record all animals who received the insemination for the first time during a particular reporting period (Month). These animals along with their suitable identification can be filtered from the insemination register (LSD 1.1). To avoid confusion about animal identification, the minimum required information about the owner of the animal, his/her category, village, species, breed etc may also be recorded against the individual animal.

(iv) Thus this new register will have record/mention pertaining to animals who received the insemination for the first time. This data may be freezed which will form base/benchmark data/figure for that particular period (month).

(v) All the subsequent AIs (second, third and so on) performed till pregnancy diagnosis of the animal (already accounted for under the base data) should be entered/accounted for in the new register (LSD 1.4) irrespective of the fact that these subsequent AIs performed may or may not pertain to the period for which the base data is freezed.

(vi) Thus, the number of animals receiving the first insemination for a particular reporting period/cycle (Month) will remain fixed/freezed/constant till calving.

(vii) During follow up, it will be ensured that pregnancy diagnosis in respect cent percent of the animals is conducted. Thus, all the animals accounted for under base data are followed up and the results indicated against each and every animal. This information can be filtered from pregnancy diagnosis register (LSD 1.2). The grand total of all the results (i.e. animals found

pregnant, empty, repeated, not followed, refused for examination, not traceable, discontinued participation, sold, transferred, died, problem breeder, aborted etc) should tally exactly with no. of animals accounted for under base data for reporting period (Month).

(viii) Based on the data on follow up results recorded against total no. of animals as per base data in the new register, a conception report indicating, in particular, AIs performed vis-à-vis, their respective results may be prepared within three months from the end of the reporting month in which the first AI was performed in respect of these animals.

(ix) The second step will be follow up of calving with reference to no. of conceptions reported/arrived at in the conception report. In this case also each and every pregnant animal is followed up and results recorded with sex and breed (including blood level) of the calf. This information can be culled out/filtered from calving report (LSD 1.3) and recorded in the new register (LSD 1.4). In this case also the sum total of all the results (i.e. animal calved, not followed for calving, non descript calf born, assisted delivery, dystocia, calf died after delivery, pre mature calf, abnormal birth, still birth, abortion etc) should invariably tally with that of the no. of pregnancies as per the conception report.

(x) The results of calving follow up may be summarized while preparing a calving/completion/closure report. This report should be submitted on or before completion of one year from submission of the conception report for particular reporting period (Month).

(xi) The monthly reports can be clubbed together for preparing the reports as per the prescribed frequency/periodicity (bi-monthly, quarterly, half yearly, yearly, final scheme closure report, etc)

**11.16.2.** The additional reporting system suggested as above can very well take care of quality aspects of the programme and ensure cent percent follow up from first AI to calving while the existing reporting system/channel will give quantitative achievements under the programme at monthly/annual interval.

**11.16.3.** The number of calvings may be treated as the single most important criterion for measuring success rate under an AI programme although the AI technician/ AI service provider as, per se, no direct role between conception and calving process. The ultimate aim/objective of the AI programme is to ensure that there is increase in number of calvings so that there is milk production vis-à-vis increase in number of genetically superior progenies to

take care of states requirements for milk production and/or draught power. Hence, the criteria of number of calvings or calf born may be treated as real measure of achievement. This will automatically take care of intermediate stage i.e. conception through AI technique which is foundation in the process of calving. However, the conception as also calving may be considered as mutually exclusive criterion to avoid achievement of calvings with less number of conceptions where the calving percentage is higher. More conceptions will ensure that the dry period in milch animals is reduced.

**11.16.4.**In view of the foregoing, the existing stipulation of “BAIF will achieve 2000 conceptions or 1250 calves in five years per centre” in the MoU/agreement between the GOK and BIRD-K may be revised/modified as “BAIF will achieve \_\_\_\_\_ conceptions and \_\_\_\_\_ calves in \_\_\_\_\_ year/s \_\_\_\_\_”. As mentioned above BAIF has to achieve on both the counts i.e. conception as well as calves since the prescription may be made mutually exclusive.

11.16.5 The summary of findings and recommendations are given in the sub chapter 5C

## Chapter 11A

### Conception and Calving Ratios

#### 11A.1. Methodology for calculation of conception rates.

**11A.1.1** The success rate for conception of AI service may be considered with reference to number of services required per conception.

**11A.1.2** One of the most important measures for reproductive efficiency could be the conception rate i.e. no. of AI required per conception. The present methodology (indicated below) practiced by BIRD-K is acceptable.

$$\text{Services per conception} = \frac{\text{Total AI of animals followed} *}{\text{Number of animals found pregnant}}$$

\* The numerator in case of services per conception i.e. AI of all animals followed doesn't include AI in respect of following animals i. Not followed, ii. Refused for examination, iii. Not traceable, iv. Sold v. Transferred vi. Died. However AIs in case of animals who have discontinued participation are included.

**11.A.1.3** A uniform benchmark figure of 2.5 i.e. 2.5 AI per conception may be accepted for all districts as also for the state as a whole and for all the agencies (DAH&VS, KMF and BIRD-K centers).

**11A.1.4** The success rate for conception to AI service may also be expressed in percentage terms, if required. In this regard the following methodology may be followed:

$$\text{Conception Rate} = \frac{\text{Number of animals found pregnant}}{\text{number of AIs against the animals followed}} \times 100$$

\*The no. of AI done should relate to only those animals which are examined for pregnancy and should not include the AI done to the animals which are not available for examination at the time pregnancy test.

**11A.1.5** In case of calving to conception ratio, the following methodology is suggested:

$$\text{Calving to Conception ratio} = \frac{\text{No. of animals calved}}{\text{No. of animals found pregnant}}$$

For example in case of BIRD-K the average calving to conception ratio for seven districts works out to 0.57 i.e. 19049 calvings against 33333 conceptions. This can also be expressed in percentage terms using the following formula:

$$\text{Calving to conception ratio} = \frac{\text{No. of animals calved}}{\text{No. of animals found pregnant}} \times 100$$

## 11A.2 Conception to service.

**11A.2.1** The overall average success rate in case of BIRD-K centers with reference to conception to service ratio works out to 0.43 against the expected level of 0.40 by GOK. This may be treated as acceptable. The overall conception to service ratio of BIRD-K is worked out for four year period (2011-12 to 2014-15). The achievements in this regard are 7.5% higher than the target. The district-wise details of conception to service ratio along with percentage of conception and services per conception are furnished in Table No.21 and graphically presented in Figure No.6. The conception to service ratio is calculated as per the methodology indicated for calculation of success rates vide para 8 page 2 of GOK letter No. CAH/BAIF/KEA/NABCONS 2015-16 dated 13.11.2015 while the percentage of conception and services per conception are worked out as indicated in the existing Management Information System (monthly abstract report of BIRD-K).

**Table 29: The district wise details of conception to service ratio etc for BIRD-K (2011-15)**

District	Total AI	Confirmed pregnancies	conception to service	Percentage of Conception	Services per conception
Kalburgi	10267	4364	0.43	42.51	2.35
Yadagiri	5098	2515	0.49	49.33	2.03
Ballari	15888	7209	0.45	45.37	2.20
Raichur	4129	1406	0.34	34.05	2.94
Vijayapura	16378	7276	0.44	44.43	2.25
Bagalakote	15800	6342	0.40	40.14	2.49
Gadag	10891	4221	0.39	38.76	2.58
<b>Total</b>	<b>78451</b>	<b>33333</b>	<b>0.43</b>	<b>42.49</b>	<b>2.35</b>

**11A.2.2** The conception to service ratio ranged between 0.49 (Yadagiri District) to 0.34 (Raichur district). The difference from district to district was found to be statistically non significant at 5% level of significance (P value being 0.12). The different levels of performance in different districts indicate that there is a need educate the farmers on detection of heat, nutrition management, record keeping etc of animals to achieve better results. Similarly, it is necessary that the low performing AI technicians are given proper and intensive refresher training on a regular basis.

**11A.2.3** As stated earlier, in response to request made by NABCONS to GOK, the DAH&VS informed the methodology for calculation of success rate for conception/confirmed pregnancies to service vide their letter dated 13.11.2015. The methodology followed by Department of AH&VS, GOK for calculation of conception to service is as under:

$$(a). \text{Conception to service} = \frac{\text{No.of animals found positive}}{\text{No.of AI done}}$$

**11A.2.4** As per the existing Management Information System (MIS), monthly abstract report is forwarded to the district coordinator of BIRD-K by each center. This report, among others, covers details of services per conception, percentage of conception, calving reports etc. for the month as also cumulative for the year (up to the end of the month). The formulae for calculation of percentage of conception and services per conception as indicated in the monthly abstract report of BIRD-K are as under:

**(a) Percentage of Conception**

$$= \frac{\text{Number of animals found pregnant}}{\text{Number of animals physically examined}} \times 100$$

$$(b) \text{Services per Conception} = \frac{\text{Total AI of all Animals followed} *}{\text{Number of animals found pregnant}}$$

\* The numerator in case of services per conception i.e. AI of all animals followed doesn't include AI in respect of following animals i. Not followed, ii. Refused for examination, iii.

Not traceable, iv. Sold v. Transferred vi. Died. However, AIs in case of animals i. discontinuing participation ii. which are problem breeders and iii. which have suffered abortion are not excluded.

The methodology for percentage of conception is adopted by BIRD-K with reference to Letter No. DAH/DPAP/BAIF/94-95 dated 22-11-94 issued by Director AH&VS Bengaluru based on the action point of state level review committee meeting held on 07.11.1994, where the methodology for rate of conception is indicated as under:

$$\text{Rate of Conception} = \frac{\text{Number of animals found pregnant}}{\text{Number of animals examined for pregnancy}} \times 100$$

The above methodology for calculation of success rate against conception to service is silent regarding as to whether the number of AI done is exclusive of AIs done in respect of certain illustrative categories of animals which were not available for examination for pregnancy test due to various reasons indicated below the relevant formula.

Incidentally, the overall average result for conception to service in case of 28 centres works out to 0.43 i.e. each conception required 0.43 AI. The above result can also be expressed in terms of percentage of conception or services per conception either by using the relevant methodology ~~are~~ or by the following method taking the conception to service ratio as a base. This is illustrated below. Percentage of Conception can be arrived at by multiplying conception to service i.e. 0.43 by 100. While services per conception can be arrived at by dividing unity by conception to service ratio.

$$\text{Services per conception} = \frac{1}{0.43} = 2.35$$

Thus, from any one of the three results, the other two results can be very well obtained. For example from the figure for services per conception, we can arrive at conception to service and percentage of conception as under:

$$\text{Percentage of Conception} = \frac{1}{2.35} \times 100 = 43$$

$$\text{Conception to Service} = \frac{1}{2.35} = 0.43$$

Thus, the end result of all the three parameters (conception to service, percentage conception and services per conception) one and the same. Hence, it is a matter as to in what form/manner one wants the results to be expressed. In view of this, DAH&VS may take a call and prescribe the methodology/formula for reporting success rate by the service provider. Incidentally, the result of conception to service will be always less than one considering inclusion of multiple observations. In very exceptional cases and that too for a very small population it can be equal to one. Hence, it is felt that expressing the results in terms of conception to service may not make better sense where the term itself should be self explanatory and very easy to comprehend. The expression of percentage of conception also do not appear to be better term as compared to number of services per conception. Percentage of conception gives number of females found pregnant out of 100 AIs performed. While the form to be adopted for expression of success rate happens to be a very minor issue, the main issue is non-availability of correct/valid data for arriving at the figures for numerator as also the denominator to be able to use the methodology/formula for expression of success rate. Hence, there is a need to adopt an additional reporting system to take care of correct data generation in this regard. The same is discussed elsewhere in the subsequent paragraph.

If one prefers to express the performance/success rate of AI programme in percentage terms (Conception Percentage) instead of services per conception, the same may be calculated with reference to unity i.e. unity divided by the figure for services per conception and multiplying the result by 100. This is illustrated below with reference to the overall performance of BIRD-K (2.35 services per conception)

$$\text{Conception \%} = \frac{1}{2.35} * 100 = 43\%$$

This can also be calculated by using the following methodology

$$\text{Conception \%} = \frac{\text{No. of animals found pregnant}}{\text{Total AIs of animals followed}} * 100$$

### 11A.3. Calving to Conception Ratio

**11A.3.1** There is no cent percent follow up of calving. In case of Pregnancy Diagnosis (P.D) also at the time of the examination, all the animals are not available for PD due to certain reasons such as the beneficiary refusing to allow the animal for examination, the animal or the



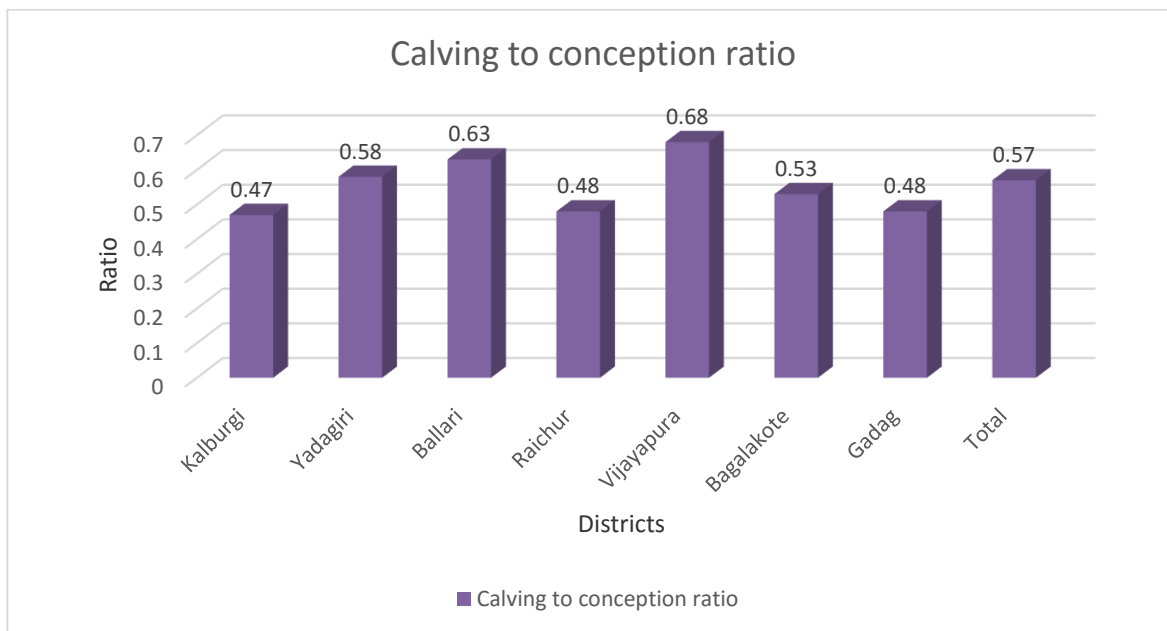
beneficiary not traceable, the beneficiary discontinued participation, the beneficiary sold or transferred the animal, animal died etc. Because of these reasons, the technician is unable to record calving in case of animals confirmed for pregnancy. As a result of the above situation, the overall calving to conception ratio observed was 0.57 during the study. This appears to be miserably low in almost all the centers. Hence, there is a need for ensuring cent percent follow up in case of calving. As mentioned in the GOK letter referred in the previous paragraph the methodology adopted by GOK for calculation of success rate in this regard is as under:

$$\text{Calving to conception ratio} = \frac{\text{No. of calves born}}{\text{No. of animals found pregnant}}$$

The district-wise details of calving to conception ratio vis-à-vis calving percentage during the four year period (2011-12 to 2014-15) are furnished in Table No. 30.

**Table 30: The district wise details of calving to conception percentage (2011-12 to 2014-15)**

Centers	Total AI	Confirmed pregnancies	Calvings	Calving to conception ratio	Calving to Conception percentage/rate
Kalburgi	10267	4364	2048	0.47	47
Yadagiri	5098	2515	1450	0.58	58
Ballari	15888	7209	4568	0.63	63
Raichur	4129	1406	681	0.48	48
Vijayapura	16378	7276	4940	0.68	68
Bagalakote	15800	6342	3349	0.53	53
Gadag	10891	4221	2013	0.48	48
<b>Total</b>	<b>78451</b>	<b>33333</b>	<b>19049</b>	<b>0.57</b>	<b>57</b>



**Figure 7: District-wise Calving to Conception ratio**

**11A.3.2** The calving to conception ratio ranged between 0.47 (Kalaburgi District) to 0.68 (Vijayapura district). The difference from district to district was found to be statistically non significant at 5% level of significance (P value being 0.49). As regards stipulation/prescription in regard to in what form this indicator is to be expressed, it is for DAH&VS to take a final view. Incidentally, expressing the parameter in percentage terms is more appealing than expressing the same as calving to conception ratio. For example, the result of calving to calving to conception ratio will always be a fraction as in case of conception ratio at 0.57 means one conception results in to 0.57 calvings. As discussed in the previous paragraph (5.7) on conception to service, the main issue is sourcing and availability of classified data. Further both the numerator and the denominator need to be defined clearly and adequately in a rational manner. For example, in case of conception to service, AIs pertaining to those animals who are found either pregnant or empty should be accounted for as denominator. This is based on the fact that the circumstances like animals refused for examination, not traceable, discontinued participation, sold, transferred, died, problem breeder, abortion etc are beyond the control of the AIT and inclusion of AIs in respect of these categories may lead to incorrect picture about the success. Further the circumstances mentioned above differ from place to place, farmer to farmer and the AIT will be in a disadvantageous position where the occurrence

of particular incidence (selling, transfer of animal etc) is more in his/her area of operation. The only thing in the control of the AIT is to ensure cent percent follow up from first AI till calving and proper recording of the results so that the various processes are interlinked to arrive at correct picture about the state of affairs of the programme. This issue is discussed in detail in subsequent paragraph.

**11A.3.3** If one prefers to express the performance/success rate of calving in percentage terms the same can be calculated by using the following methodology.

$$\text{Calving to conception \%} = \frac{\text{No. of animals calved/calves born}}{\text{No. of animals followed for calving}} \times 100$$

**11A.3.4** The data on services per conception were not available in respect of A I centers of DAH & VS and private commercial AI workers. However, most of the farmers who availed the services from KMF and DAH & VS indicated that, they require on an average not more than two services per conception. The private AI workers claimed that their success rates ranged from 1.5 to 2 AIs per conception.

**11A.3.5** In case of 74 beneficiaries of KMF centers, 52 beneficiaries (70%) reported up to two AIs per conception and the remaining 22 beneficiaries (30%) reported up to three AIs per conception. Based on this, the overall conception rate in case of KMF center can be considered as 2.3 AIs per conception.

**11A.3.6** In case of 76 beneficiaries who availed the departmental services, 32 beneficiaries (42%) reported single service per conception, 22 beneficiaries (29%) reported two services per conception, two beneficiaries (3%) reported three services per conception and the remaining 20 (26%) reported four services per conception. Based on this, the number of services per conception works out to 2.13 for DAH & VS.

## Chapter 11B

### Performance of AI Centres of BIRD-K, KMF and DAH&VS

The department of Animal Husbandry and Veterinary Services (AH &VS) Government of Karnataka (GOK), has been supporting BAIF Institute of Rural Development-Karnataka (BIRD-K) AI centers under the Centrally Sponsored Scheme (CSS). These centers help promote and facilitate Artificial Insemination (AI) using frozen semen of pedigree sires of cattle and Buffaloes. The services are provided at the doorstep of the farmers.

As per the agreement, BIRD-K has established 100 AI centers in nine districts of North Karnataka. The study area covered seven districts which have 83 centres in total. However, the sample for the study was drawn from 73 centres spread over 28 taluks.

During 2014-15 total AIs performed in Karnataka through BIRD K AI Centres was 1, 78,079. The total confirmed pregnancies were 118023 while the no. of female calves born were 17,501. In respect of AI done Karnataka ranked 6<sup>th</sup> amongst 14 states. The position of Karnataka with respect to performance of AI Centres is as under:

- a. No. of districts covered are 15 districts
- b. No. of Centres opened : 160 in Karnataka (including 100 Centres supported by DAH&VS under the present scheme)
- c. No. of villages covered : 2588
- d. Families covered : 1, 11,174
- e. Avg AIs/ centre: 1113.
- f. Avg villages/centre: 16.
- g. Avg families/centre: 695.

Although performance of AI Centres of BIRD-K, KMF and DAH&VS have been studied extensively during the study, the overall comparison of the these Centres and ranking of the same based on performance may not be realistic as the three agencies have different primary objectives, strengths and weaknesses. DAH&VS has wide horizon of activities which also cover a small portion on AI and KMF has also other main objectives of increasing milk production and giving dairy farmers a remunerative price. However an attempt has been made to give salient aspect of the AI services provided by all the three agencies in the state.

#### 11B.1. Comparative performance of AI Centers (BIRD-K, KMF and DAH&VS)

**11B.1.1** Considering various factors given in the subsequent / relevant paragraphs of the report, it can be mentioned that the quality of services viz. timeliness and doorstep delivery in case of

BIRD-K centers are found to be better than the centers operated by KMF and DAH&VS. However, as regards the end result of the service, the farmers interviewed reported that the no. of services required per conception did not exceed two AIs per conception in most of the cases, where the services were sought from all the three agencies. Item No. 4 of the Interview schedule for farmers seeks to obtain perceptions of the farmers. During the study 384 farmers were interviewed and their response was obtained which indicates that the farmers have good opinion about the timeliness and quality of services provided to them. Stakeholders have recognised the need for such a kind of service and have expressed that the service should continue. The services rendered by BIRD K have received good acceptance among the farmers due to quality, promptness and doorstep delivery of the same. The farmers have indicated that they are benefitted through the service.

**11B.1.2** During the year 2014-15, the average number AI performed per center in case of BIRD K worked out to 811 as against 262 AIs performed by DAH & VS centers. Further, as regards confirmed pregnancies and calves born the figures are 360 pregnancies and 213 calves born per center in case of BIRD K as against 90 pregnancies and 61 calves born per center in case of DAH& VS centers. The district-wise position with regard to AI performance, confirmed pregnancies and calvings is furnished in Table No. 31.

**Table 31: District-wise performance of AI performed by BIRD-K and DAH & VS Centres**

District/Agency	No. of centers	AI performed		Conceptions		Calvings	
		Total	Per center	Total	Per center	Total	Per center
<b>Kalaburgi</b>							
BIRD-K	14	7461	533	3141	224	1365	98
DAH&VS	214	6791	32	2511	12	1523	7
<b>Yadagiri</b>							
BIRD-K	7	4295	614	2306	329	1418	203
DAH&VS	101	8007	79	3161	31	2422	24
<b>Ballari</b>							
BIRD-K	20	17208	860	7773	125	4642	232
DAH&VS	125	45499	364	16531	132	8794	70
<b>Raichur</b>							
BIRD-K	21	14822	706	6245	297	3401	162
DAH&VS	1066	12995	123	4608	43	2726	26
<b>Vijayapura</b>							
BIRD-K	5	4731	946	2147	429	1520	304

District/Agency	No. of centers	AI performed		Conceptions		Calvings	
		Total	Per center	Total	Per center	Total	Per center
DAH&VS	144	33171	230	12628	88	9026	63
BIRD-K	9	12311	1368	5168	574	3300	367
DAH&VS	144	111245	773	36275	252	26057	181
<b>Gadag</b>							
BIRD-K	7	6478	925	3128	88	2037	291
DAH&VS	88	23788	270	7362	84	5993	68
<b>Total</b>							
<b>BIRD-K</b>	<b>83</b>	<b>67306</b>	<b>811</b>	<b>29908</b>	<b>360</b>	<b>17683</b>	<b>213</b>
<b>DAH&amp;VS</b>	<b>922</b>	<b>241496</b>	<b>262</b>	<b>83076</b>	<b>90</b>	<b>56547</b>	<b>61</b>

**11B.1.3** In case of four KMF centers where data were available, AIs performed, confirmed pregnancies and calvings per center during the year 2014-15 were 639 AIs, 303 pregnancies and 227 calvings, respectively. The details are furnished in Table No. 32.

**Table 32: Achievements of KMF centers (AIs performed, confirmed pregnancies and calvings)**

Sl. No.	Districts	Center	AI performed	Pregnancies	Calvings
1	Kalaburgi	Pattan	550	250	155
2	Vijayapura	Takkalike	928	472	371
3	Bagalakote	chikkalgundi	609	285	312
4	Gadag	Kanavi	468	205	70
	<b>Total</b>		<b>2555</b>	<b>1212</b>	<b>908</b>
	<b>Average per center</b>		<b>639</b>	<b>303</b>	<b>227</b>

**11B.1.4** The private commercial AI centers reported annual insemination between 1800 to 2100 and confirmed pregnancies between 840 to 960

**11B.1.5** In absence of availability of sufficient quantitative and qualitative data particularly in respect of DAH&VS and KMF on various performance indicators pertaining to the different agencies, it is rather difficult to arrive at a conclusive opinion about their comparative performance. In case of DAH&VS and KMF in fact, the team has to mainly depend on quantitative data. Hence, the ranking needs to be done taking into account certain factors indicated below:

- a. Locations of the centers, geographical and environmental factors.

- b. Availability of breedable female population in the area of operation.
- c. Scope/opportunities which exists in the area for earning livelihood vis-à-vis dependence or otherwise of the farmers on dairy farming as a source of supplementary/subsistence income.
- d. General awareness amongst the farmers about management and nutrition of the animals.
- e. Ability to provide doorstep service and its promptness vis-à-vis difficulties in this regard.
- f. Creation of goodwill/general awareness and visible impact in the operational area.
- g. Efforts towards provision of AI+ services through extension and related activities.
- h. Affording the farmers/state government wider choice for selection of the most important AI input i.e. semen and thereby helping/supplementing the efforts of State Government to implement breeding policy to achieve the desired results.

**11B.1.6** Although there is locational disadvantage /their area of operation being limited to backward (most, more) areas, the quantitative performance of BIRD-K centers is better than DAH&VS centers as the centers are dedicated to AI work.

**11B.1.7** As regards quality aspects, the BIRD-K has achieved on an average (4 years' average -2011-12 to 2014-15) 2.35 AIs per conception. The performance of KMF and DAH&VS centers as also that of private AI workers was found to be good. (2.11 and 2.30 AIs per conception). However, the performance arrived at in respect of the latter agencies is not backed by authentic data and is derived/developed on the basis of farmers' perceptions.

**11B.1.8** The BIRD-K centers provide doorstep services with promptness. The DAH&VS centers face certain bottlenecks like non-availability of frozen semen carriers and vehicles for mobility. The DAH&VS centers also face staff constraints.

**11B.1.9** The BIRD-K centers can operate in area where doorstep delivery of AI services may not be possible through DAH&VS and KMF centers. The KMF centers opt to operate in milk shed areas/villages, covered by a particular co-operative milk society. The KMF centers are under the control and management of cooperative societies. The AI worker of KMF center is

staff of the society. He/She is required to give priority for milk procurement/society's work during certain time period of the day. He/She has to struggle for time management to ensure that both the tasks of timely AI service and milk procurement are handled with promptness.

**11B.1.10** The KMF and private AI centers choose the villages/areas having comparatively higher availability of breedable female population as also better awareness amongst the farmers about management and nutrition aspects of animals.

**11B.1.11** The BIRD-K centers have made visible impact in remote villages and earned desired goodwill. The BIRD-K center may prove to be a successful model and need to be taken forward for equitable distribution of benefits of livestock development. The present existence of BIRD-K centers covering five year period appears to be rather short and as such their long term involvement (say not less than 10 years) may be essential.

**11B.1.12** The BIRD-K centers can prove to be a nucleus of live stock development in the villages where DAH&VS Centres are not present and can be entrusted with AI+ services such as first aid, de-worming, fodder development activities, mineral mixtures supplementation, formation of breeders' association, etc. At present BIRD-K centers are undertaking various extension activities in a rather sporadic manner. There is a need to streamline the process so that all the relevant aspects of extension activities are covered in a uniform and balanced way.

## **11B.2. DAH&VS AI Centres:**

**11B.2.1.** DAH&VS is involved in providing AI Services through the Veterinary institutions numbering 4212 spread throughout the state. Although there are 388 exclusive AI Centres, other services like providing treatment and extension services to a limited scale are also carried out by these centres.

**11B.2.2.** One of the challenges the state faces under breeding sector has been to provide effective delivery system for adopting new and innovative technologies. The gaps / constraints identified under breeding sector have been – (1). Non-availability of bulls possessing high yield germplasm of milk and (2). Inadequate infrastructure and extension facilities (DAH & VS, GoK, Annual Administrative Report 2014-15).



### **11B.3. KMF AI Centres:**

**11B.3.1.** KMF is providing AI services through 3500 AI Centres in the State. However these AI Centres cater mainly to the farmers in the Cooperative fold and the farmers who are on the milk routes. The Secretary or AI worker attached to the village level Milk Producers Cooperative Society (MPCS) is engaged in overall management of the MPCS in addition to carrying out Artificial Inseminations.

**11B.3.2.** The Karnataka Milk Federation has in its fold 14 District Milk Unions spread over the entire state covering all the 30 districts (22,000 villages). KMF has 14,444 registered societies with total membership of 23, 08,000 (around 160 members per society). As at the end of March 2015, KMF had 12,928 functional Dairy Cooperative Societies (DCS). The KMF's total milk procurement is around 65 lakh Kg. from about 22 lakh milk producer members (average 3Kg/member or 300Kg/village). The State produces 1.78 Crore liters of milk/day of which 37% is procured by KMF.

**11B.3.3.** The Nandini Sperm Station (NSS), Hessarghatta, an ISO 9001:2008 certified unit is the Federation's main and most important breeding infrastructure. The Central Monitoring Unit (CMU) of department of Animal Husbandry, Dairying and Fisheries (DAH & F), GoI has certified NSS as 'A' Grade Semen Station. The NSS produces semen doses from Holstein Friesian (H.F.), Jersey and Murrah bulls. The annual production of NSS is four million doses. The NSS is able to meet the requirement of over 3,500 AI Centers of milk unions all over the State.

### **11B.4 Comparative performance of AI Centers (BIRD-K, KMF and DAH&VS)**

The performance of AITs is the best mainly due to their exclusiveness in providing the service backed by professional team available with BIRD-K vis-à-vis infrastructure provided and available with them. The AI workers of KMF center also have other responsibilities besides AI. Similar is the case with DAH&VS centers. Although performance of AI Centres of BIRD-K, KMF and DAH&VS have been studied extensively during the study, the comparison of the these Centres and ranking of the same based on performance may not be realistic as the three agencies have different primary objectives, strengths and weaknesses. DAH&VS has wide horizon of activities which also cover a small portion on AI and KMF has also other main objectives of increasing milk production and giving dairy farmers a remunerative price.

## Chapter 12

### Reflection and conclusions

The evaluation team found that BIRD K has created all relevant infrastructure facilities and utilized the funds properly. Infrastructure sourced under the project was found in place in the field. All the farmers indicated that service of BIRD-K has been good particularly in view of the fact that the service is available promptly at their doorstep and the results are also good. Besides the infrastructure provided at the AI center, the BIRD-K has created certain infrastructure for storage of semen and for transport of liquid nitrogen at Dharwad. This infrastructure has enabled better delivery of breeding services to the dairy farmers. It can be said with a degree of certainty that broad objective of the scheme to provide AI services to the doorstep of farmer has been fulfilled to a certain extent.

The AI technician is supposed to be a localite and should be willing to work in rural areas with a good command over local language. Each of the AI technicians fulfilled the minimum requirement of academic qualification. Their qualifications ranged from SSLC to double graduate (BA, B.Ed.). Introduction of AI workers by BIRD K (at their own centers and private commercial AI workers at other places) and KMF has, thus, helped in smooth and successful change in breeding service delivery system, i.e. the transition of delivery of services by Vets to Non-Vets and then to lay inseminator. The delivery of services by the lay inseminators enabled increase in efficiency of the scheme by optimum use of manpower. The dairy farmers were also comfortable due to the presence of a localite as a lay inseminator. Proper training, capacity building and handholding given by BIRD-K to these lay inseminators increased the effectiveness of the AI service delivery mechanism.

The BAIF has made proper arrangement for supply of LN<sub>2</sub> at each center. The LN<sub>2</sub> is procured from Karnataka Milk Federation (KMF), M/s Abhijit enterprises, Kolhapur, MSPL, Hospet. The LN<sub>2</sub> levels in the Cryo cans are measured from time to time. The LN<sub>2</sub> is topped up as per the requirement. Retaining of LN<sub>2</sub> level, facilitated the maintenance of quality of the semen straws which ultimately led to betterment of the breeding services.

The BIRD-K centers in Karnataka receive their replacement stock of semen from input supply division, Dharwad (A minimum stock of 700 doses per bull is maintained at Dharwad). There

are no issues in semen supply and also the quality of semen is maintained as per the Quality Management System in accordance with ISO 9001-2008 for processing and freezing of cattle and buffalo semen. Adherence to the Quality Management System for semen straws ensured the preservation of the motility of the sperms in the semen straws, which enabled better results in terms of better conception ratio and confirmed pregnancies.

In absence of any record about history and pedigree of the dams, it is very difficult to conclusively state as to whether the AI programme implemented through BIRD-K is in conformity with breeding policy of GOK or not. However, based on the analysis of the data collected and compiled on semen supply and utilization vis-à-vis observations during the field visits, no deviations by and large was observed in regard to various points (listed above) pertaining to breeding policy at field level. Under field conditions, especially with farmers' herds, no breeding records or records on level of exotic inheritance are available. However, during the field visits no crossbred progeny of cattle exceeding 75% exotic inheritance was observed. There is a need to educate the AI Technicians to follow a well defined breeding regime so that the exotic inheritance is maintained at the desired level

The BIRD-K collects the service charges @ Rs 15 per AI as per the MoU and deposits the same to the GOK. The AI Service charges recovered from farmers of dairy cooperative societies who availed the services of KMF AI centres are not at all uniform and vary widely. Some societies do not prescribe any specific rate and leave it to the AI workers and farmers as to what should be the charges. This is particularly applicable for those KMF AI workers who provide services to non-member farmers from villages located far off from the society HQ. In general, the charges required to be paid by the farmers' range from Rs. 0-100/service. For door step service extra charges are required to be paid by the farmers. The AI workers gets in the range of Rs. 5-100/service and is required to remit to the society/KMF 50-100 per cent of total service charges paid by the farmers. Where no service charges are recovered from the farmers, the society, compensates the AI workers suitably by paying some service charge per AI done by him/her. Dairy farmers were happy with the doorstep delivery of the AI services by BIRD-K and were agreeable to pay the service charges and it was not considered as a burden.

The major limiting factor for success of AI has been detection of heat (oestrus). The correct detection of heat is vitally important and will help if and when insemination should occur while

incorrect /inefficient detection of heat may lead to unreliable decision to breed. Numerous factors, environmental and managerial and cow related play a role in oestrus expression and detection. There is a need to hold fertility camps to detect cow related problems and treat them appropriately on one hand and give orientation training to farmers about proper heat detection vis-à-vis time of insemination after the cow is observed in standing heat. The biological events associated with timing of insemination indicate that best results are obtained, if the animals are inseminated between eight to twelve hours after the onset of oestrus. Although, the lay – inseminators trained by BIRD-K are equipped to detect oestrus, however at times heat detection becomes a formidable issue and leads to loss of breeding cycle / repeat breeding and thus adversely affects productivity of the animal. To increase the efficiency of oestrus detection, it is advisable that the dairy farmers are given adequate training to detect heat in dairy animals.

BIRD-K has been undertaking a good number of promotional programmes and extension activities. The activities which may have direct bearing on success are village meeting, fixed visits to villages, fodder development, AI and PD camps, exhibitions, infertility camps, mineral mixture supplementation, screening camps and their follow up, health camps, training of farmers including special training etc. For animal health camps and screening camps collaboration with DAH&VS would be advisable while other activities can be taken up by the center independently.

The BIRD-K has been submitting the prescribed reports to GoK as per the prescribed periodicity. The report lacks mathematical accuracy in respect of sub totals and grand totals both horizontally and vertically. There appears to be lack of desk monitoring as reports are not filled in completely and also not written in legible hand writing. The existing system is not at all user friendly so far as qualitative assessment of the programme is concern and does'nt afford access to data/information knowing qualitative results.

The monitoring of the performance of BIRD-K Centers by DAH&VS was not uniform and regular at different levels in the district. The conceptions and calvings are not verified by the AD/DD at regular intervals. However, wherever such verification is done, in stray cases/on random basis the reports are sent to higher authorities for necessary action.

The targets fixed for services per conception in Karnataka State are based on conception to service at 0.40. The overall conception to service 0.43 in case of BIRD-K centres which is 7.5% higher than the stipulation. This compares well with the standards of GOK as also other states and the difference was found to be statistically non significant at 5% level of significance.

With reference to the targets fixed at State level by GoK, calving to conception ratio is 0.625. As against this, in case of BIRD-K centres the calving to conception ratio for BIRD-K works out to 0.571. The difference is however, found to be statistically non significant at 5% level of significance.

The farmers who utilized the AI services from BIRD K have good opinion about the timeliness and quality of services provided to them under the scheme. The stake holders recognized the need for such a kind of service and want the services to continue. The services rendered by BIRD-K has acceptance among farmers mainly due to reach/doorstep delivery. The farmers have appreciated the benefits derived from the scheme and have been actively participating. The BIRD-K has been successful in creating awareness among the farmers.

There is no overlap of efforts of DAH&VS, KMF and BIRD-K. Such instances do not occur as there is a unwritten clear cut demarcation in the area of operations. The DAH&VS normally do not provide service wherever the services of BIRD-K or KMF are available. The area of operation of BIRD-K centers doesn't cover the villages where functional KMF dairy societies exist.

Although performance of AI Centres of BIRD-K, KMF and DAH&VS have been studied extensively during the study, the overall comparison of the these Centres and ranking of the same based on performance may not be realistic as the three agencies have different primary objectives, strengths and weaknesses. DAH&VS has wide horizon of activities which also cover a small portion on AI and KMF has also other main objectives of increasing milk production and giving dairy farmers a remunerative price. However an attempt has been made to give salient aspect of the AI services provided by all the three agencies in the state.

Considering various factors given in the subsequent / relevant paragraphs of the report, it can be mentioned that the quality of services viz. timeliness and doorstep delivery in case of BIRD-K centers are found to be better than the centers operated by KMF and DAH&VS. However,

as regards the end result of the service, the farmers interviewed reported that the no. of services required per conception did not exceed two AIs per conception in most of the cases, where the services were sought from all the three agencies. Item No. 4 of the Interview schedule for farmers seeks to obtain perceptions of the farmers. During the study 384 farmers were interviewed and their response was obtained which indicates that the farmers have good opinion about the timeliness and quality of services provided to them. Stakeholders have recognised the need for such a kind of service and have expressed that the service should continue. The services rendered by BIRD K have received good acceptance among the farmers due to quality, promptness and doorstep delivery of the same. The farmers have indicated that they are benefitted through the service.

As regards quality aspects, the BIRD-K has achieved on an average (4 years' average -2011-12 to 2014-15) 2.35 AIs per conception. The performance of KMF and DAH&VS centers as also that of private AI workers was found to be good. (2.11 and 2.30 AIs per conception). However, the performance arrived at in respect of the latter agencies is not backed by authentic data and is derived/developed on the basis of farmers' perceptions.

The BIRD-K centers provide doorstep services with promptness. The DAH&VS centers face certain bottlenecks like non-availability of frozen semen carriers and vehicles for mobility. The DAH&VS centers also face staff constraints. The BIRD-K centers can operate in area where doorstep delivery of AI services may not be possible through DAH&VS and KMF centers. The KMF centers opt to operate in milk shed areas/villages, covered by a particular co-operative milk society. The KMF centers are under the control and management of cooperative societies. The AI worker of KMF center is staff of the society. He/She is required to give priority for milk procurement/society's work during certain time period of the day. He/She has to struggle for time management to ensure that both the tasks of timely AI service and milk procurement are handled with promptness.

The BIRD-K centers have made visible impact in remote villages and earned desired goodwill. The BIRD-K center may prove to be a successful model and need to be taken forward for equitable distribution of benefits of livestock development. The present existence of BIRD-K centers covering five year period appears to be rather short and as such their long term involvement (say not less than 10 years) may be essential.

The BIRD-K centers can prove to be a nucleus of live stock development in the villages where DAH&VS Centres are not present and can be entrusted with AI+ services such as first aid, deworming, fodder development activities, mineral mixtures supplementation, formation of breeders' association, etc. At present BIRD-K centers are undertaking various extension activities in a rather sporadic manner. There is a need to streamline the process so that all the relevant aspects of extension activities are covered in a uniform and balanced way.

The performance of AITs is the best mainly due to their exclusiveness in providing the service backed by professional team available with BIRD-K vis-à-vis infrastructure provided and available with them. The AI workers of KMF center also have other responsibilities besides AI. Similar is the case with DAH&VS centers. Although performance of AI Centres of BIRD-K, KMF and DAH&VS have been studied extensively during the study, the comparison of the these Centres and ranking of the same based on performance may not be realistic as the three agencies have different primary objectives, strengths and weaknesses. DAH&VS has wide horizon of activities which also cover a small portion on AI and KMF has also other main objectives of increasing milk production and giving dairy farmers a remunerative price.

## Conclusions

- i. Staff and equipment provided by BIRD at each Artificial Insemination (AI) centres is adequate.
- ii. The LN2 and semen straws are supplied at regular interval and there are no issues in terms of quality and quantity in this regard.
- iii. In case of exotic/crossbred cattle the semen of Jersey and Holstein Friesian (HF) is used while in case of buffaloes the semen of Murrah and Surti breeds is used. BIRD –K has also semen of various recognized indigenous cattle breeds. This is as per the Karnataka State Cattle breeding policy.
- iv. None of the farmers reported abortion, miscarriage etc. There were no data to indicate that the confirmed pregnancies did not lead to calving. All the animals which are followed for pregnancies are not available with the farmer at the time of follow up for calving. Mechanism for proper followup was lacking in the scheme.
- v. The conception ratios and conception to calving ratios observed during the study were quite satisfactory and are comparable with the overall results observed elsewhere in the state/country.
- vi. The farmers are very much/fully satisfied about the service provided by the BIRD-K centers. There is overlap of services as the DAH&VS centers cover all the villages while

KMF covers only those villages where dairy societies are functional while BIRD-K centers operate only in the villages allocated to them.

- vii. Monitoring mechanism advised in the scheme was not properly implemented.

## Limitations and constraints in the Evaluation Study

### 12.1. Data availability

- 12.1.1.** BIRD-K has been maintaining lot of data at various level. However, the same is not classified one in case of certain important aspects like services per conception. The conceptions as also calvings are not followed up with reference to AI performed in respect of the particular animal. Thus, the data fail to easily establish clear cut relation between AI performed, confirmed pregnancies vis-à-vis calvings since all the three items of performance are recorded only with reference to the calendar year. The practice of judging the performance in quantity terms is given more importance rather than quality. Although at the ground level i.e. individual center level, various formats have been prescribed printed and supplied, they are neither filled completely nor are legible. The gaps in these formats/registers are not brought to the notice of AI technician during inspection/monitoring visits by the district/regional coordinators. As such these returns were found to have gaps in most of the centers. In view of this, it was very difficult to collect and compile data pertaining to the most important aspect of performance i.e. services per conception. The farmer wise breeding record is prescribed. However almost in 99% of the cases no recording is done. Thus, farmer wise history of breeding record is not available.
- 12.1.2.** In case of DAH&VS institutions, availability of data was very limited and as such their comparison with other centers was difficult covering most of the parameters. The farmers are not given any breeding card. After AIs performed the farmer is handed over a small chit recording the date of follow up for pregnancy test.
- 12.1.3.** In case of KMF centers, no data are available. At the AI center level, a simple format is prescribed where details like farmers name, animal details, dates of AI, pregnancy tests, calving etc are recorded on a single A4 size sheet which is prepared in duplicate. A copy of this format is forwarded to the respective milk union on monthly basis through the supervisor.



## Chapter 13

### Recommendations

**13.1** The AI center should be provided with thawing equipments so that at field level better thawing of semen is possible for obtaining the optimum results.

**13.2** As regards the maintenance of record at center level some of the important columns in almost each and every record are left blank/unattended. Secondly the records are not written in legible hand writing. There is a need to ensure proper supervision and follow up so that vital information is recorded.

**13.3** Each and every animal should be followed up to the logical end i.e. from AI done (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and so on) till calving. The beneficiary wise record should be maintained. Each and every beneficiary should be given animal wise breeding card.

**13.4** The records for usage of exotic and crossbred semen should be maintained separately i.e. may not be clubbed with the record for cows. The columns for breed, grade of the dam and the sire whose semen is used should be split in to two columns each so that there is separate column for recording blood level and it is ensured that the records have mention about blood level of both dam and sire. At present these columns are not filled uniformly by all the AITs and in case of sires either the names or breed is mentioned. Perhaps in absence of separate columns, mention about blood level remains to be recorded. Same is the case with recording blood level of dam.

**13.5** A special care needs to be taken while using exotic/crossbred semen with exotic inheritance beyond 62.5% level. The breeding policy circulated vide GO dated 21.05.2015 stipulates that exotic level should be maintained at 50%.

**13.6** The services per conception may be considered as the most important parameter for success of the breeding programme and uniform methodology may be adopted in this regard.

**13.7** The state Government standard for calving to conception ratio at 62.5% is too low. Hence, the same may be revised upwards to a reasonable level (Review of literature indicates that in all probability 80% calves are born and at the most 20% of conceptions can result into still births, abortions, dystocia, etc.). There is no reason why the target for calving could be as low

as 62.5% in view of the fact that undoubtedly, more than 62.5% of confirmed pregnancies can definitely result in to calving.

**13.8** The extension/promotional activities may be escalated so that the imbalance in achievements from district to district is reduced and the present gap is narrowed down.

**13.9** There may be regular follow up from DAH&VS at various levels and the periodic review meetings may be held at regular intervals as prescribed.

**13.10** Since, doorstep delivery of AI service is the crux of the breeding programme, the BIRD-K centers may be continued. These centers have made visible impact in remote and backward areas of the state. The farmers are very happy with the promptness and quality of service rendered by these centers. These centers are still in the process of establishing themselves on firm footings and may need long term existence in the remote and backward regions. Their exit may prove to be a setback for the breeding programme particularly in absence of easy and immediate availability of any other suitable agency for their replacement.

**13.11** The AITs should be given refresher training on a regular basis for improvement in their performance at the field level.

**13.12** The AI service provider may also be involved in AI + services like fodder development, Mineral mixture supplementation and all other relevant activities pertaining to overall dairy development.

**13.13** The methodology suggested for calculation of success rates in respect of services per conception and calvings may be accepted and followed immediately.

## Chapter 14

### Overall Impact of the Project

14.1. Most of the project objectives have been achieved. The only grey area being inadequate followup post insemination by the inseminators and inadequate monitoring by DAH&VS.

14.2. The project led to doorstep delivery of AI services and increase in breeding efficiency leading to increased productivity in the long run.

14.3. Despite of locational disadvantage /their area of operation being limited to backward (most, more) areas, the quantitative performance of BIRD-K centers is good.

14.4. Due to good quantitative performance and doorstep delivery, BIRD AI Centres have created goodwill amongst dairy farmers.

14.5. The asset quality of the dairy farmers improved due to the awareness created by the BIRD-AI Centres and also due to increase in the reproductive efficiency of dairy animals.

14.6. The dairy farmers have developed confidence about maintaining the assets in good productive state and improve their economics through better health, breeding, feeding and management practices. The dairy farmers are convinced about theoretical usefulness of all these aspects i.e proper breeding services, use of quality semen, etc. and are also ready to pay for the breeding services made available to them.

14.7. The BIRD-K centers have made visible impact in remote villages and earned desired goodwill. The BIRD-K center may prove to be a successful model and need to be taken forward for equitable distribution of benefits of livestock development. The present existence of BIRD-K centers covering five year period appears to be rather short and as such their long term involvement (say not less than 10 years) may be essential.

14.8. The BIRD-K centers can prove to be a nucleus of live stock development in the villages where DAH&VS Centres are not present and can be entrusted with AI+ services such as first

aid, de-worming, fodder development activities, mineral mixtures supplementation, formation of breeders' association, etc. At present BIRD-K centers are undertaking various extension activities in a rather sporadic manner. There is a need to streamline the process so that all the relevant aspects of extension activities are covered in a uniform and balanced way.

14.9 The BIRD-K centers are also involved in extension activities which are complementary to AI programme. Through BIRD-K it may be possible to improve accessibility of door step delivery of AI services in areas which are out of reach of AI. It may be possible to have proper control and coordination over the operations of BIRD-K. In view of this, it can be concluded that BIRD-K model may be a better one and needs to be taken forward for successful organized breeding programme.

## Annexure A

### Sanctioned Terms of reference (TOR) of the study

#### Evaluation Questions

##### (A) About AI centers, semen source and charges:

1. What was the staff and equipment provided by BIRD-K at each Artificial Insemination (AI) center? What was the qualification and experience of each staff member?
2. What was the arrangement of Liquid Nitrogen made by BIRD-K? How frequently was it measured and/or replaced in the AI centers?
3. What was the source of semen that is used by BIRD-K for AI? What was the quality certification process for semen?
4. What was the frequency or eventuality at/after which the quality of semen in AI centers tested? In case such tests have been done, what have been the results?
5. What were the breeds of cattle/buffaloes whose semen was used in AI? Whether there were some fixed breed/breeds, the semen of which was used for AI in each district? Which were they (district wise)? Do they conform to the Breeding Policy of Government of Karnataka?
6. What were the charges for AI that is collected by BIRD-K from farmers? How much of it was deposited to the Government?

##### (B) Analyses of Achievements:

7. What was the conception to AI service (excluding repeat service) ratio/ percentage achieved by the AI centers? Is there significant statistical difference in the center to center or district to district (conception to AI service ratio/percentage to be calculated for district as a whole too)? If yes, what are the reasons for it?
8. What was the calving to conception ratio/ percentage achieved by the AI centers? Is there significant statistical difference in the center to center or district to district (calving to conception ratio/percentage to be calculated for district as a whole too)? If yes, what are the reasons for it?
9. How does the conception to AI and calving to conception ratio/ percentage of districts or the State as a whole compare with the standards of Government of Karnataka and other States? If the difference of these is statistically significant, what are the reasons for the same?
10. A perusal of achievements reveals that of the nine districts where the scheme is operational, Bagalkot has consistently and significantly been at the top, whereas Gulbarga has consistently and significantly been at the bottom? What is the reason for this? What steps can be taken to increase achievement of Gulbarga?

##### (C) Role of BIRD and Government:

11. Whether BIRD-K was submitting monthly report of conceptions and calves born, to the Deputy Directors of the districts?
12. Whether the Deputy Directors ensured verification of 10% of the conceptions and calves born and reported to the Director, AH&VS? If yes, in how many cases their reports differed with BIRD-K reports and how?

13. Whether the District Level Review Committees met every three months as prescribed in clause IX (B) of the Agreement (Annexure-2 of RFP)? If yes, had they reported anything to the State Level Review Committee?
14. Whether the State Level Review Committee met at least once a year as prescribed in clause X (B) of the Agreement (Annexure-2 of RFP)?

**(D) Residual Matters:**

15. How do the BIRD-K AI centers of Karnataka under evaluation compare with AI centers of Government of Karnataka and that of KMF?(An IIM Bangalore study of 1990s ranked BIRD-K AI centres as best, KMF AI centres second and Government AI centres third.)What are the reasons for this difference of rankings?
16. What is the actual per service cost incurred (including establishment, salaries and maintenance) by the department, KMF and BIRD-K AI centres? Against it, what is the cost recovered from cow/buffalo owners using their services?
17. What is the opinion of the farmers who have utilized the services of BIRD AI centers under this scheme about the timelines and quality of services provided to them?
18. Should the scheme be continued? If yes, what are the suggestions for improving the scheme?
19. Whether there is any overlap of the efforts of department, KMF and BIRD-K AI centres (the same animal being serviced by efforts of department, KMF and BIRD in the same season)? If not already so, is there a chance of so happening? How can this be prevented?
20. Methodology of calculation of success rate for conception (confirmed pregnancy) to service and bench mark figures for conception to AI service for each district, if existing, for department, KMF and BIRD-K AI centres, need to be mentioned and if not existing, the figures need to be prepared and mentioned. The same should be done for Calving to conception ratio also.

## Annexure-B

### Survey Tools and Questionnaires

#### Evaluation of Performance of BIRD's AI Centres

#### Interview Schedule for BIRD-K/KMF/AHAI Centres

Data Sheet No.	Date of visit	Name of the AI Centre in-charge with designation	Contact Number
		Name :  Designation:	

Location of the AI Centre			
District	Taluk	Gram Panchayat	Village

1. Profile of the AI Centre							
1.a. Type of the AI Centre <b>(Pl. Tick)</b> [Mobile-Door step delivery of AI service  Stationary – Animals brought to the centre]	Stationary	<input type="checkbox"/>					
	Mobile	<input type="checkbox"/>					
1.b. Date of establishment of the centre							
1.c. Coverage/area of jurisdiction	No. of Villages serviced	Families/Households covered					
1.d. Breedable bovine female population covered	Cattle (cows )			Buffaloes	Total bovines		
	Indigenous	CB	Total				
1.e. Is there any other AI centers providing services in the villages under your jurisdiction?	Yes	<input type="checkbox"/>			No	<input type="checkbox"/>	
	If Yes, which agency (BIRD-K/KMF/AH&VS)		which agency		(BIRD-K/KMF/AH&VS)		
	1.	2.	3.				

1.f. If Yes, what % of animals are covered by the other AI centre?	.....%
1.g. What % of animals are covered by <b>more than one centres?</b>	.....%
1.h. If no animals are covered by more than one centres, whether possibility of such incidence happening is there?	Yes <input type="checkbox"/> No <input type="checkbox"/> Reasons : 1.                      2.                      3.

2. Manpower						
Sl.No.	Category	Nos.	Qualification	Experience	Incentive/Retainer fee	AI service charges earned /service
1	AI Technician					
2	Other Staffs a. b. c.					

3. Training Received				
Place	Classroom/Theory (days)	Practical/ internship (days)	Others (Pl. Specify)	

4. Work Schedule						
4.a. Time of visit	Morning		Afternoon		Evening	
	From	To	From	To	From	To
4.b. Total distance covered per day (Km)/Technician	Distance covered (km)	Villages covered (Nos.)	Breedable females covered (Nos.)			
4.c. Total Working days/ year						
4.d. Do you feel that the present man power availability is	Yes <input type="checkbox"/> No <input type="checkbox"/>					



adequate vis-à-vis Work schedule	No  .....(Nos.)
4.e. If no, what is the additional requirement	

### 5. Infrastructure provided and adequacy thereof

<b>5.a. Infrastructure in the centre</b>				
Particulars	Source	Cost (Rs.)	Quantity (Nos.)	Specification
(a) LN <sub>2</sub> cryo-can (35 ltrs-BA 35)				
(b) Frozen Semen (FS) carriers (3 ltrs-BA 3)				
(c) A.I service equipment				
i. AI gun ii. Sheath packets iii. Hand gloves				
(d) Furniture				
i. Table ii. Chair iii. Almirah				
(e) Two wheeler				
(f) Others (Pl specify)				
<b>Total cost</b>				
5.b. Do you feel that the present infrastructure is adequate?		Yes	<input type="checkbox"/>	
		No	<input type="checkbox"/>	
5.c. If no, what is the additional requirement?		1.	2.	3.

<b>6. Input supply arrangements and Cost</b>		
6.a. Procedure for procuring various inputs particularly LN <sub>2</sub> and Semen	LN <sub>2</sub>	Semen
6.b. Source of supply	LN <sub>2</sub>	Semen



6.p. Other details regarding Input Supply (**Pl. capture the details as per Appendix- II**)

<b>7. Service Charge</b>	
7.a. Service charges recovered from farmers	Rs...../service
7.b. Of which, deposited with State Govt.	Rs...../service
7.c. What is the accounting procedure followed in this regard? (Pl specify)	

<b>8. Working Results</b>	
<b>a. Conception to AI</b>	
8.a.1. Ratio/percentage of Conception to A.I. service(year wise)	<b>Collect the information as per Appendix-III</b>
8.a.2. Are you satisfied with the above ratio/percentage	Yes <input type="checkbox"/> No <input type="checkbox"/>
8.a.3. Reasons for Good/ Bad performance	1. 2. 3.
8.a.4. Steps proposed for improving the performance	1. 2. 3.

<b>Working Results</b>	
<b>b. Calving to Conception</b>	
8.b.1. Ratio/percentage of Calving to Conception (year wise)	<b>Collect the information as per Appendix-III</b>
8.b.2. Are you satisfied with the above ratio/percentage	Yes <input type="checkbox"/> No <input type="checkbox"/>
8.b.3. Reasons for Good/ Bad performance	1. 2. 3.
8.b.4. Steps proposed for improving the performance	1. 2. 3.

<b>9. Management Information System</b>	
9.a. Maintenance and up-dation of breeding cards (obtain specimen)	Yes <input type="checkbox"/> No <input type="checkbox"/>
9.b. <b>If no</b> , what is the system of maintaining breeding related records? ---- ----->	

9.c. Registers maintained with A.I. centers (obtain Proforma )	1.	2.	3.
9.d. Account books available at A.I centre	1.	2.	3.
9.e. Indicate the date of submission of monthly reports to District Co-ordinator, BIRD-K of the concerned district, along with the month it pertains to <b>(Pl. check the records available in the centre)</b> (obtain Proforma)	<b>2013-14</b>		<b>2014-15</b>
9.f. Indicate the date of submission of monthly reports to Asst. Director, A.H. of the concerned district, along with the month it pertains to <b>(Pl. check the records available in the centre)</b> (obtain Pro forma)	<b>2013-14</b>		<b>2014-15</b>
9.g. Formula used for calculation of conception rate, other ratios, etc.	<b>AI to conception Ratio</b>		<b>Conception to calving ratio</b>

<b>10. Review Meetings attended by AI Centre-in-charge</b>			
Sl.No	Meeting Convened by	Frequency	No. of Meetings attended
			2013-14      2014-15
1	Assistant Director (AH)	Monthly/Qtrly/Annual	
2	Dist. Coordinator (BIRD-K)	Monthly/Qtrly/Annual	
3	Regional Coordinator (BIRD-K)	Monthly/Qtrly/Annual	
4	Others	Monthly/Qtrly/Annual	

<b>11. Cost Incurred per Service (Reference year 2014-15)</b>			
Sl.No.	Particulars	Amount/annum (Rs.)	Remarks, if any
<b>Expenses (2014-15)</b>			
1	Rent		
2	Incentive		
3	Salary/Retainer-ship fee		

4	Travel & Conveyance		
5	Semen		
6	LN2		
7	Mobile phone		
8	Promotional activities		
9	Depreciation on Cryo cans, FS Carriers, Two Wheeler, Furniture & fixtures etc.		
10	Maintenance charges		
11	Other expenses		
	<b>Total Expenses (A)</b>		
	Total no. of AIs done during the year 2014-15 (D)		
	<b>Per Service cost incurred [(A)/(D)]</b>		
<b>Income (2014-15)</b>			
1	Service charge collected from farmers for AI services rendered		
	<b>Total Income (B)</b>		
2	Net Income (C)= (B)-(A)		
	Total no. of AIs done during the year 2014-15 (D)		
	Net income/AI [(C)/(D)]		

## 12. Performance of the center

### 12.a. AIs performed

Year	2011-12	2012-13	2013-14	2014-15	2015-16
Target (no)					
Achievements					
% achievement					

### 12.b. Pregnancy Diagnosis (PD) carried out

Year	2011-12	2012-13	2013-14	2014-15	2015-16
Target (no)					
Achievements					
% achievement					

### 12.c. Calvings recorded

Year	2011-12	2012-13	2013-14	2014-15	2015-16
Target (no)	Not Applicable				
Achievements					
% achievement					



## Appendix- I (of Annexure-I)

### Year-wise Supply & Consumption of semen

Particulars	Blood Level	10-11		11-12		12-13		13-14		14-15		Total	
<b>I-Semen doses (No.)</b>													
<b>A-Cattle</b>													
<b>a. Exotic/CB</b>		Supply	Utilization	Supply	Utilization	Supply	Utilization	Supply	Utilization	Supply	Utilization	Supply	Utilization
Jersey Bull	100%												
	75%												
	62.5%												
	50%												
<b>Sub-total</b>													
HF	100%												
	75%												
	62.5%												
	50%												
<b>Sub-total</b>													
<b>Total - exotic</b>													
<b>b. Indigenous</b>													
Hallikar	100 %												
A - Mahal	100 %												
K-Valley	100 %												
Khillar	100 %												
Deoni	100 %												
Ongole	100 %												
Other	100 %												
<b>Sub-total</b>													
<b>Total-cattle</b>													
<b>B. Buffalo</b>													
Murrah	100 %												
Surti	100 %												
<b>Sub-total</b>													
<b>Grand total</b>													

## Appendix- II (of Annexure-I)

### Year-wise supply of Semen, LN2 and AI equipment

Particulars	Unit	10-11		11-12		12-13		13-14		14-15		Total	
		Qty.	No. of times	Qty.	No. of times	Qty.	No. of times	Qty.	No. of times	Qty.	No. of times	Qty.	No. of times
I Semen Straws	Doses												
II. LN2	Litre												
III. Equipment													
AI Guns	No.												
Sheaths	No.												
Handgloves	pairs												



## Appendix- III (of Annexure-I)

### Year-wise working results etc.

Particulars	Unit	10-11	11-12	12-13	13-14	14-15	Total/average
I. a. AI done – 1 <sup>st</sup> AI	No.						
b. Repeat AIs done	No.						
<b>Total</b>							
<b>II. Follow up</b>							
a. PD examination/ Confirmed conceptions	No.						
b. Calving	No.						
<b>III. Results/percentage</b>							
<b>Confirmed pregnancies</b>							
out of 1 <sup>st</sup> AI	No.						
Repeat AI	No.						
<b>Total</b>							
<b>Calving</b>							
out of 1 <sup>st</sup> AI	No.						
Repeat AI	No.						
<b>Total</b>							





**Appendix- IV (of Annexure-I) Year-wise extension activities carried out by the AI Centre**

Sl.No.	Particulars	Unit	10-11	11-12	12-13	13-14	14-15	Total
1	Screening camp							
	a. Screening camps held	No. of camps						
	b. follow-ups	No. of animals						
2	Vaccination camps							
	a. camps held	No. of camps						
	b. vaccinations done	No. of animals						
3	Fodder development	No. of families						
4	Village meetings	Nos.						
5	Fixed visits to villages	No. of villages						
6	AI camps	No. of camps						
7	P D camps	No. of camps						
8	Exhibitions	No. held						
10	Infertility camps	No. of camps						
11	De-worming camps							
	a. camps held	No. of camps						
	b. de-worming	No. of calves						
12	Calf rallies							
	a. rallies held	No. of rallies						
	b. calves participated	No. of calves						
13	M .M. Supplementation	Kg. of MM						
14	Kitchen gardening	No. of families						
15	Vermi composting	No. of families						
16	NADEP composting	No. of families						
17	Animal Health camps	No. of camps						
18	Farmer's training							
	a. trainings held	Nos.						
	b. farmer's trained	No. of farmers						
	c. special trainings (dairy)	Nos. held						
19	SHG/CBA meetings	Nos.						
20	Others	specify						

## Evaluation of Performance of BIRD's AI Centres

### Interview Schedule for Beneficiaries of AI Centres

Data Sheet No.	
Date of visit	
Beneficiary of the AI Centre of (Pl. Tick)	BIRD-K <input type="checkbox"/> KMF <input type="checkbox"/> AH & VS <input type="checkbox"/>

District	Taluk	Gram Panchayat	Village

#### 1. BENEFICIARY DETAILS / BASIC INFORMATION

1.1 Name: Mr. /Mrs. /Smt. \_\_\_\_\_ Mobile no: \_\_\_\_\_

1.2 Address:

1.3. Are you an elected member of any civic body?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	If yes, Pl specify the post held	
1.4 Presence/ existence of dairy co-operative society in the village (Pl tick)	Yes <input type="checkbox"/>	No <input type="checkbox"/>

#### 2. Breakup of breedable female bovines

Life Stage	Cattle (cows)			Buffalo	Total Bovines	Remark
	Indigenous	CB	Total			
<b>(a) Adults</b>						
i. Inmilch						
ii. Dry						
<b>Sub total</b>						
<b>(b) Young stock</b>						
i. Heifers						
ii. Female calves						
<b>Sub total</b>						

<b>Grand total</b>					
Whether natural service / breeding bull available in the village	Yes <input type="checkbox"/>	N <input type="checkbox"/>			

<b>3. Availability of Breeding Services and their proximity</b>					
<b>3.1. AI Service</b>					
Location (village) of the A.I center			Distance from the farm (km)		
AH &VS	BIRD-K	KMF	AH &VS	BIRD-K	KMF
<b>3.2. Natural Service&amp; Source (availability of Breeding Bull)</b>					
Own Source		Private		Common	

<b>4. Details regarding the services availed</b>	
From whom you avail AI service at present?	BIRD_K <input type="checkbox"/> AH & <input type="checkbox"/> KMF <input type="checkbox"/> Natural Servi <input type="checkbox"/>
Whether the service is effective/ satisfactory?	Yes <input type="checkbox"/> N <input type="checkbox"/>
Whether you will continue with the agency in future?	Yes <input type="checkbox"/> N <input type="checkbox"/>
If no, give reasons	1. 2.
Suggestions for improvement	1. 2.
Whether the service is available at door steps?	Yes <input type="checkbox"/> N <input type="checkbox"/>
If no, at what distance (Km)?	.....km.
Whether the distance of the AI center is OK?	Yes <input type="checkbox"/> No <input type="checkbox"/>
If no, what should be the ideal distance? (Km)	.....km.
How you will register for the services of AI and pregnancy diagnosis?	Over Phone <input type="checkbox"/> Personal visit <input type="checkbox"/> Others (Pl specify)



<b>5. Availability of other AI centres/services</b>	
Whether services of <b>other AI Centres</b> [other than the AI centre whose beneficiaries are being interviewed] are available for the villagers?	BIRD-K <input type="checkbox"/> AH & <input type="checkbox"/> KMF <input type="checkbox"/>
If Yes, are you taking their services for AI?	Yes <input type="checkbox"/> No <input type="checkbox"/>
If Yes, are the AI services availed for the same animal?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Source of AI service sought <b>previously</b>	BIRD-K <input type="checkbox"/> AH & <input type="checkbox"/> KMF <input type="checkbox"/> Natural Service <input type="checkbox"/>
Was the service effective/ satisfactory?	Yes <input type="checkbox"/> No <input type="checkbox"/> If No, Reasons 1. _____ 2. _____

<b>6. Training/ Guidance</b>	
Training/ Guidance received, if any	Yes <input type="checkbox"/> No <input type="checkbox"/> If Yes, in What areas? 1. Breeding Management <input type="checkbox"/> 2. Health management <input type="checkbox"/> 3. Nutrition Management <input type="checkbox"/> 4. Record Keeping 5. Others (Pl. Specify)

<b>7. Suggestions regarding the scheme</b>	
suggestions for improving the delivery of A.I service	1. 2. 3.
What services, <b>other than AI</b> , are required to be provided by the AI Centre?	1. 2. 3.
Whether the services of AI centre should be continued?	Yes <input type="checkbox"/> No <input type="checkbox"/> If Yes, Reasons 1. 2. 3. If No, Reasons 1. 2. 3.

## Annexure C

### List of persons with addresses personally interviewed

Sl.no.	Name	District	Centers	Institution	Mobile no.
1	Sri.Mahanthaiah Hiremat	Kalaburgi	Kooganur	BIRD-K	9743783043
2	Sri.Ramesh Nayak	Kalaburgi	Muthakoda	BIRD-K	9945449785
3	Sri.Shankar	Kalaburgi	Aranakal	BIRD-K	8971143427
4	Sri.Sharana Basappa H.Kanakat	Kalaburgi	Suntanoora	BIRD-K	9591683049
5	Sri.Vinod s. Gunjatty	Kalaburgi	Benekepally	BIRD-K	9972767178
6	Sri.Umakanth Saraf	Kalaburgi	Mallabad	BIRD-K	9740343856
7	Sri.Nagappa	Yadagiri	Belagundi	BIRD-K	9663443142
8	Sri. Balabhima	Yadagiri	Geddalamari	BIRD-K	9535412218
9	Sri. Beemanna Ramaiah Police Patil	Yadagiri	Marakal Kollura	BIRD-K	9901099301
10	A.GirimallanaGouda	Ballari	Havinal	BIRD-K	9591067095
11	B.Goniswamy	Ballari	Nidagurthi	BIRD-K	9686703040
12	T.Maddanappa	Ballari	Magi Mavinahalli	BIRD-K	9740210865
13	P.Praveen Kumar	Ballari	Nagathi basapura	BIRD-K	9945067599
14	D.Badappa	Ballari	Sunkadakallu	BIRD-K	9901745951
15	Imam Hussain	Raichur	Ganadala	BIRD-K	9008588532
16	Sanna Dabbayya	Raichur	Rajolli	BIRD-K	9901550629
17	Gangappa Neelappa Bagali	Raichur	Ramadurga	BIRD-K	9448369745
18	Sri.S.N.Nandyal	Vijayapur	Kumte	BIRD-K	8722726721
19	Sri.Subhash S.Ingale	Vijayapur	Hadalasanga	BIRD-K	8197906577
20	Sri.V.M.Ingale	Vijayapur	Ballothi	BIRD-K	8197906578
21	Sri.Sandeep R.Kamble	Vijayapur	Korahalli	BIRD-K	9008912630
22	Sri. Ravi C.Kondappanavar	Vijayapur	Kollora	BIRD-K	9741933832
23	Eranna Angadi	Bagalakot	Vadageri	BIRD-K	8197906581
24	Mallikarjuna G	Bagalakot	Kerakalamatti	BIRD-K	8197906585
25	Mahadeva S Adimani	Bagalakot	Yelliguthi	BIRD-K	9902609592
26	Viswanth S Hulli	Gadag	Kadampura	BIRD-K	9964710639
27	Veeranna B.Koppad	Gadag	Hunagundi	BIRD-K	8197509662
28	Kalamesh V Dodawada	Gadag	Hullura	BIRD-K	9980230745
29	hanumantharaya	Kalaburgi	Pattan	KMF	9972321436
30	Vilas B.M.Patil	Kalaburgi	Hodalur	KMF	8970383499
31	A.Kariyappa	Ballari	Uttangi	KMF	9900617680
32	Ganesh	Raichur	Venkatagiri camp	KMF	9972683815
33	L.Y.suryavamshi	Vijayapur	Takkalike	KMF	9980257041
34	Sangappa M Karigoudar	Bagalakot	Chikkalagundi	KMF	9901569360
35	Basappa N Kori	Gadag	Kanivi	KMF	99022364712
36	Dr.V.Hegga	Kalaburgi	Harasur	DAH&VS	9449255885

37	Rahamathulla	Yadagiri	Yelheri	DAH&VS	9448892098
38	Dr.S.Manjunath	Ballari	H.Mallanakere	DAH&VS	9448778992
39	Dr. Rashid Iqbal	Raichur	Kalmala	DAH&VS	9448795354
40	Dr.P.S.Surpur	Vijayapur	Tikota	DAH&VS	9448102999
41	Dr.Suresh Hanchinal	Bagalakot	Katariki	DAH&VS	9845483602
42	Dr.S.D.Kalburgi	Gadag	Hulikoti	DAH&VS	9538615871



## Annexure D

### Places, date and number of sample beneficiaries interviewed

District	Taluk	Centers	Village	No.	Date	Remarks
Kalaburgi	Sedam*/Afzalpur	Kooganuru	Kooganuru	5	31-Jan-16	BIRD K
			Gandagaon	4	31-Jan-16	
	Jewaragi	Muthakoda	Muthakoda	6	23-Jan-16	
			Handrinal-SA	7	23-Jan-16	
	Chittapura	Aranakal	Aranakal	2	1-Feb-16	
			Jeevanagi	3	1-Feb-16	
	Alanda	Suntanoora	Suntanoora	7	2-Feb-16	
			Aloor B	2	2-Feb-16	
	Chincholi	Benekepally	Benekepally	5	30-Jan-16	
	Afzalpura	Mallabad	Mallabad	7	30-Jan-16	
		<b>Sub Total</b>		<b>48</b>		
	Alanda	Hodalur	Hodalur	10	3-Feb-16	KMF
	Kalburgi	Pattan	Pattan	10	2-Feb-16	
		<b>Sub Total</b>		<b>20</b>		
	Kalburgi	Harasur	Harasur	Harasur	9	22-Jan-16
			Harasur Thanda	1	22-Jan-16	
	<b>Sub Total</b>		<b>10</b>			
<b>District total</b>				<b>78</b>		
Yadgiri	Yadgiri	Belagundi	Belagundi	1	20-Jan-16	BIRD K
			Kundapur	4	20-Jan-16	
			Badiyal	5	20-Jan-16	
	Surapura	Geddalamari	Geddalamari	3	19-Jan-16	
			Kadadaral	4	19-Jan-16	
			Bailakunti	3	19-Jan-16	
	Shahapura	Marakal Kollura	Marakal Kollura	4	18-Jan-16	
			Marakal Kollura camp	1	18-Jan-16	
			Marakal	5	18-Jan-16	
		<b>Sub Total</b>		<b>30</b>		
	Yadgiri	Yeleheri	Yeleheri	8	21-Jan-16	AH&VS
			G B Thanda	2	21-Jan-16	
		<b>Sub Total</b>		<b>10</b>		
<b>District total</b>				<b>40</b>		

District	Taluk	Centers	Village	No.	Date	Remarks	
Ballari	Siraguppa	Havinal	Havinal	5	8-Feb-16	BIRD K	
			Nagraj Camp	3	8-Feb-16		
	Sanduru	Nidagurthi	Nidagurthi	3	9-Feb-16		
			Kathinakamba	3	9-Feb-16		
			Post Salakalli	1	9-Feb-16		
	H.B.Halli	Magi Mavinahalli	Magi Mavinahalli	6	9-Feb-16		
	Hadagali	Nagathi basapura	Nagathi basapura	7	10-Feb-16		
	Kudligi	Sunkadakallu	Sunkadakallu	4	10-Feb-16		
			Zejjam	2	10-Feb-16		
	<b>Sub Total</b>			<b>32</b>			
	Uttangi	Uttangi	Uttangi	12	12-Feb-16		KMF
Hadagali	H Mallanakere	H Mallanakere	13	12-Feb-16	AH&VS		
<b>District total</b>			<b>59</b>				
Raichur	Rayachuru	Ganadhala	Ganadhala	4	16-Feb-16	BIRD K	
			Bichheli camp	4	16-Feb-16		
			Ele Bichheli	1	16-Feb-16		
			Gillesugur camp	1	16-Feb-16		
	Rajolli	Manvi	Heerapur	7	17-Feb-16		
			Kataknur	4	17-Feb-16		
	Devadurga	Ramadurga	Amarapur	5	15-Feb-16		
			Maladkal	5	15-Feb-16		
	<b>Sub Total</b>			<b>31</b>			
	Sindhanur	Venkatgiri camp	Venkatgiri camp	10	19-Feb-16		KMF
	Raichur	Kalamal	Kalamal	7	18-Feb-16		AH&VS
Sitanagar camp			2	18-Feb-16			
<b>Sub Total</b>			<b>9</b>				
<b>District total</b>			<b>50</b>				
Vijayapura	Vijayapura	Kathnalli/Kum te	Kumta	8	12-Feb-16	BIRD K	
	Indi	Hadasasanga	Hadasasanga	5	14-Feb-16		
	B. Bagevadi	Ballothi	Ballothi	7	10-Feb-16		
			Kolhar	1	10-Feb-16		
	Sindagi	Jalawada/Kora halli	Korahalli	8	15-Feb-16		
	Muddebihala	Kollura	Kollura	3	11-Feb-16		
			Yaragal	3	11-Feb-16		
<b>Sub Total</b>			<b>35</b>				
Vijayapura	Jedannagar	Takkalika	10	12-Feb-16	KMF		

District	Taluk	Centers	Village	No.	Date	Remarks
		Tikota	Tikota	4	13-Feb-16	AH&VS
			Tikota Rampur	6	13-Feb-16	
	<b>Sub Total</b>			<b>10</b>		
	<b>District total</b>			<b>55</b>		
Bagalkot	Hunagunda	Vadageri	Vadageri	8	21-Feb-16	BIRD K
			Ilal	2	21-Feb-16	
	Badami	Kerakalamatti	Kerakalamatti	7	21-Feb-16	
			Kagalagomba	3	21-Feb-16	
	Bilagi	Yelliguthi	Yelliguthi	6	21-Feb-16	
			Anagawadi	4	21-Feb-16	
	<b>Sub Total</b>			<b>30</b>		
	Bilagi	Chikkalagundi	Chikkalagundi	10	22-Feb-16	KMF
	Hadagalli	Kataraku	Kataraku	10	23-Feb-16	AH&VS
			Lingarajapura	2	23-Feb-16	
<b>Sub Total</b>			<b>12</b>			
<b>District total</b>			<b>52</b>			
Gadag	Mundaragi	Kadampura	Doni	8	11-Feb-16	BIRD K
			Kadampura	2	11-Feb-16	
	Rona	Hunagundi	Hunagundi	8	19-Feb-16	
			Hole Hadgali	2	19-Feb-16	
	Sirahatti	Hullura	Hullura	7	11-Feb-16	
			Suranigi	2	11-Feb-16	
			Undenahalli	1	11-Feb-16	
	<b>Sub Total</b>			<b>30</b>		
	Gadag	Kanavi	Kanavi	8	20-Feb-16	KMF
			Hosur	2	20-Feb-16	
<b>Sub Total</b>			<b>10</b>			
Gadag	Hulikoti	Hulikoti	10	20-Feb-16	AH&VS	
<b>District total</b>			<b>50</b>			
<b>Districts</b>	<b>28 Taluks</b>		<b>G. Total</b>	<b>384</b>		

NB: The Centre, Taluk and District wise complete list of above sample beneficiaries is at Appendix 2.

## Annexure E

### Compilation of Case Studies and Best Practices

The study team found that some of the beneficiaries interviewed from Ballari, Bagalakote and Gadag district have reported good benefits from the AI centers operating in their areas. These are presented as case studies/best practices. Out of the six beneficiary farmers listed below, five are obtaining the services from BIRD-K and one from DAH&VS.

1. Sri. Suresh S/o Linganna L, Village: Nagathi Basapur (Ballari), Contact No. 9980979824



- a. The farmer has eight breedable crossbred cows (five cows and three Hiefers).
- b. The total calvings from the five cows has been eight with AI services from BIRD-K.
- c. The service to conception ratio was 1.6 i.e. 1.6 AIs per conception.
- d. His milk production (herd average) is around 8.5 lts per animal per day.

2. Hanumanthappa S/o Goneppa, Village M. Mavinahalli (Ballari).



- a. The farmer has 14 breedable Bovine females comprising of four adult cows (of which one crossbred), five she-buffaloes and five Hiefers (of which, one CB and one Buffalo). Besides this he has seven female calves (one crossbred, two indigenous cattle and four buffalo)
- b. The total calvings from the nine females (4 cows and 5 she buffaloes) have been 12.
- c. The service to conception ratio was 1.5 i.e. 1.5 AI per conception.
- d. His average milk production (wet average) which was just 1+ lts per animal increased by 2 and half times after induction of 1 crossbred cow.

3. Sri N.D. Achanu, Village Kagalagomba (Bagalakote), Mobile 9632730630



- a. The farmer has 11 breedable Bovine females comprising eight CBs (7 cows and 1 hieffer) and three buffaloes (2 she buffaloes and 1 hieffer) as also four CB female calves.
- b. The total calvings have been 6 with the AI service provided by BIRD-K center.
- c. The service to conception ratio was 1.3 (1.3 AIs per conception).
- d. His average per animal per day milk production (wet average) increased from 2 lts per day per animal to 8 lts per day per animal as a result of addition of CBs cows in his herd.

4. Sri Basappa Lakkundi, Village Doni (Gadag), Mobile 9741268392.



- a. The farmer has 22 breedable Bovine females (20 indigenous cows and 2 buffaloes) as also 6 female calves (3 indigenous cattle and 2 buffaloes).
- b. The total calvings have been 12 with the AI service provided by BIRD-K center.
- c. The service to conception ratio was 1.7 (1.7 AIs per conception).
- d. He is hopeful that his per day milk production will increase by three folds after the upgraded stock comes in milk in his herd (This will also improve his overall herd average).

5. Sri Basavaraj Nanddibandi S/o shivappa, Village Doni (Gadag), Mobile 9902395086.



- a. The farmer has 20 breedable Bovine females comprising 3 CB cows, two she buffaloes and 15 buffalo heifers
- b. The total calvings have been 5 with the AI service provided by BIRD-K center.
- c. The service to conception ratio was 1.3 (1.3 AIs per conception).
- d. The average milk production per day (wet average) in his herd increased from 2 lts per animal to 5 lts per animal due to induction of CB cows.

6. Sri Rajendra Dugoudar, Village Hulikote (Gadag), Mobile 9448139060.



- a. The farmer has 45 breedable Bovine females (1 CB cow, 35 she buffaloes and 8 buffalo heifers as also 8 buffalo female calves.
- b. The total calvings have been 16 with the AI service of DAH&VS
- c. The service to conception ratio was 1.3 (1.3 AIs per conception).
- d. His average milk production (wet average) increased from 2.5 lts per day per animal to 4 lts per day per animal due to induction of a CB cow and up gradation of buffaloes.

## Annexure F

### Details of major deviations, Non conformities, digression of programme

Sl.No	Programme guidelines	Deviations/non conformities	Remarks/ Reference
1	Monitoring and review		
	a. State level review committee meeting	<p>I. During the years 2010-11 and 2011-12 as also 2013-14, no meeting was held</p> <p>II. During the other years i.e. 2012-13, 2014-15 and 2015-16 (up to 18<sup>th</sup> Sept. 2015), two meetings each were held. However, only one meeting held in the year 2012-13 (10.04.2012) the meeting was chaired by ACS&amp;DC.</p>	<p>I. The committee shall meet once a year or earlier if required.</p> <p>II. The chairman of the committee is Development Commissioner (DC).</p> <p>III. In absence of DC, the meeting was chaired by a member.</p>
	b. District level review committee meetings	<p>I. No meeting was held in Raichur district so far.</p> <p>II. No meeting was held in Kalaburgi district except for the year 2013-14.</p> <p>III. In Ballari, Bagalakote, Vijayapura and Gadag only one meeting was held so far during the year 2014-15.</p> <p>IV. In yadagiri district two meetings were held in 2014-15.</p>	<p>The details are as provided by BIRD-K on 18<sup>th</sup> September 2015. The committee shall meet once in every three months or earlier, if deemed necessary and forward details of discussions to state level committee.</p>



## Annexure G

### List of Beneficiaries (384) of (a) BIRD-K-238, (b) KMF-72 and (c) GOK-74

Sl. No.	Agency	District	Taluk	Centre	Name of Beneficiaries	Mobile
1	BIRD 1	Kalaburgi	Afzalpura	Kooganur	Laxmikanth S Mali Patil	9886483669
2	BIRD 2	Kalaburgi	Afzalpura	Kooganur	Vittal rao Hanumanth Rao Hosgoudar	9731046544
3	BIRD 3	Kalaburgi	Afzalpura	Kooganur	Ramachandra Chandrasa	8105010050
4	BIRD 4	Kalaburgi	Afzalpura	Kooganur	Mahesh Nagendrappa Nandargi	9535558769
5	BIRD 5	Kalaburgi	Afzalpura	Kooganur	Bhimashankar Laxman Choodoji	9535615737
6	BIRD 6	Kalaburgi	Afzalpura	Kooganur	Rachaiiah Swamy Koulagi	9591292871
7	BIRD 7	Kalaburgi	Afzalpura	Kooganur	Channabasappa mulege	8971789419
8	BIRD 8	Kalaburgi	Afzalpura	Kooganur	Babu Hirapur Doddappa	9901361679
9	BIRD 9	Kalaburgi	Afzalpura	Kooganur	Annarai Hanumantha rai Madiwala	8971467809
10	BIRD 10	Kalaburgi	Jewargi	Muthakod	Chandrakanth Ningappa Mylari	9663726181
11	BIRD 11	Kalaburgi	Jewargi	Muthakod	Basavaraj Sharanappa Nalvar	8105346745
12	BIRD 12	Kalaburgi	Jewargi	Muthakod	Akbar Mohammed Saab Harnur	
13	BIRD 13	Kalaburgi	Jewargi	Muthakod	Mahanthesh Megeri	
14	BIRD 14	Kalaburgi	Jewargi	Muthakod	Shakil Rajasaab Mainar	9591829970
15	BIRD 15	Kalaburgi	Jewargi	Muthakod	Basavaraj Darmanna Bidargond	9901666937
16	BIRD 16	Kalaburgi	Jewargi	Muthakod	Gundppa Kurnahalli	9663563827
17	BIRD 17	Kalaburgi	Jewargi	Muthakod	Shivasaranappa Hosamani	9972073367
18	BIRD 18	Kalaburgi	Jewargi	Muthakod	Sharanappa Shankarappa Kumbar	9591750445
19	BIRD 19	Kalaburgi	Jewargi	Muthakod	Vijaya Kumar Malkanna	9902997074
20	BIRD 20	Kalaburgi	Jewargi	Muthakod	Amin Saab B Saab	8105502994
21	BIRD 21	Kalaburgi	Jewargi	Muthakod	Thippanna Gwalappa Shivpur	9902373388
22	BIRD 22	Kalaburgi	Jewargi	Muthakod	Bhimanna Kurnahalli	9901539209
23	BIRD 23	Kalaburgi	Chittapur	Aranakal	Amrutrao Veeranna Shirgonda	9900758593
24	BIRD 24	Kalaburgi	Chittapur	Aranakal	Srikanth Chandrappa Kalla	9108201564
25	BIRD 25	Kalaburgi	Chittapur	Aranakal	Prabhakar Chandrappa	9945917565
26	BIRD 26	Kalaburgi	Chittapur	Aranakal	Revanasiddappa Ningadalli	9945354178
27	BIRD 27	Kalaburgi	Chittapur	Aranakal	Siddanna Mallappa Channakeri	9632232011
28	BIRD 28	Kalaburgi	Alanda	Suntanur	Bhagyashree Saranayya Matapathi	7760218181
29	BIRD 29	Kalaburgi	Alanda	Suntanur	Parvathi Shivaputrappa Biradar	9611312654
30	BIRD 30	Kalaburgi	Alanda	Suntanur	Anulabai Samaiah Hiremat	9611608587
31	BIRD 31	Kalaburgi	Alanda	Suntanur	Jagannath Annarao Patil	9902850028
32	BIRD 32	Kalaburgi	Alanda	Suntanur	Nagaraj Malleshappa Biradar	9663505233
33	BIRD 33	Kalaburgi	Alanda	Suntanur	Baburao Irappa Patan	9611737637
34	BIRD 34	Kalaburgi	Alanda	Suntanur	Nagendrappa Mahadevappa Haraliah	9611901516
35	BIRD 35	Kalaburgi	Alanda	Suntanur	Sadashiv Bheesma Patil	9945925017
36	BIRD 36	Kalaburgi	Alanda	Suntanur	Shrimantha rao Gundanna Akkuj	9972056714
37	BIRD 37	Kalaburgi	Chincholi	Benekepalli	Veerabadhraiah Basaiah Matapathi	7760340820
38	BIRD 38	Kalaburgi	Chincholi	Benekepalli	Kallappa Saibanna Metri	9071132499

Sl. No.	Agency	District	Taluk	Centre	Name of Beneficiaries	Mobile
39	BIRD 39	Kalaburgi	Chincholi	Benekepalli	Sharanappa Maruthi Teli	9535065763
40	BIRD 40	Kalaburgi	Chincholi	Benekepalli	Munarbi Usmansaab Saliwale	9902662789
41	BIRD 41	Kalaburgi	Chincholi	Benekepalli	Kisan Rao Shankar Rao Nisandar	7353623379
42	BIRD 42	Kalaburgi	Afzalpura	Mallabad	Mahadev Shivarai Navi	884371055
43	BIRD 43	Kalaburgi	Afzalpura	Mallabad	Yeshunath Mahanthappa Badidal	9591820415
44	BIRD 44	Kalaburgi	Afzalpura	Mallabad	Kajappa Shivappa Kattimani	9945104537
45	BIRD 45	Kalaburgi	Afzalpura	Mallabad	Mukka Saab Babu Saab Mulla	9591820415
46	BIRD 46	Kalaburgi	Afzalpura	Mallabad	Babulal Basha Saab Asingala	9945575055
47	BIRD 47	Kalaburgi	Afzalpura	Mallabad	Revanasidda Shivalingappa Myakeri	9901604766
48	BIRD 48	Kalaburgi	Afzalpura	Mallabad	Eeranna Kadappa Chinamgeri	9901308102
49	KMF 1	Kalaburgi	Alanda	Hodalur	Ambarish Adiraj Malipatil	9844912221
50	KMF 2	Kalaburgi	Alanda	Hodalur	Parameshwar Basavanappa Mantali	9902825326
51	KMF 3	Kalaburgi	Alanda	Hodalur	Mahesh Basavaraj Patil	9632551741
52	KMF 4	Kalaburgi	Alanda	Hodalur	Ganapathi Murugappa Gangani	9632049556
53	KMF 5	Kalaburgi	Alanda	Hodalur	Amruth Rao Shivamurthappa Kamshetty	8105112330
54	KMF 6	Kalaburgi	Alanda	Hodalur	Shanthappa Bolashetty	9686460031
55	KMF 7	Kalaburgi	Alanda	Hodalur	Siddaram Basavaraj Patil	9632696565
56	KMF 8	Kalaburgi	Alanda	Hodalur	Annarao veera sangappa	9901921408
57	KMF 9	Kalaburgi	Alanda	Hodalur	Vijayakumar Basavantha rao Patil	9900124117
58	KMF 10	Kalaburgi	Alanda	Hodalur	Mojappa Naganna tope	9741174936
59	KMF 11	Kalaburgi	Kalaburgi	Pattan	Laxmikant Shanthappa Nagure	9972190965
60	KMF 12	Kalaburgi	Kalaburgi	Pattan	Basavaraj Vaggi	9902568663
61	KMF 13	Kalaburgi	Kalaburgi	Pattan	Nagappa Rayappa Natiker	
62	KMF 14	Kalaburgi	Kalaburgi	Pattan	Shivaraya Chunchuri	9980091751
63	KMF 15	Kalaburgi	Kalaburgi	Pattan	Rajendra Kaladappa Gouda	9663743466
64	KMF 16	Kalaburgi	Kalaburgi	Pattan	Sanjeev Kumar Shivappa Vaggi	9632274432
65	KMF 17	Kalaburgi	Kalaburgi	Pattan	Basavaraj Attur	9845801719
66	KMF 18	Kalaburgi	Kalaburgi	Pattan	Sri Shaila Mali Patil	9611897990
67	KMF 19	Kalaburgi	Kalaburgi	Pattan	Shivashankarapp Prakash Police Patil	9845927048
68	KMF 20	Kalaburgi	Kalaburgi	Pattan	Yeshwanth Rao Hanunthappa Rao	9731112644
69	GOK 1	Kalaburgi	Kalaburgi	Harasur	KariBasappa Ujja	8095795178
70	GOK 2	Kalaburgi	Kalaburgi	Harasur	Shivarama Daturgi	9972566462
71	GOK 3	Kalaburgi	Kalaburgi	Harasur	Shivaraj Anna Rai Saradagi	8197550714
72	GOK 4	Kalaburgi	Kalaburgi	Harasur	Basavaraj Hadpad	9880501398
73	GOK 5	Kalaburgi	Kalaburgi	Harasur	Sharanappa Mali Patil	9945562266
74	GOK 6	Kalaburgi	Kalaburgi	Harasur	Mallinath Ankalgi	7026456968
75	GOK 7	Kalaburgi	Kalaburgi	Harasur	Vishwanath Sanganna Lagasetty	9740164995
76	GOK 8	Kalaburgi	Kalaburgi	Harasur	Sagar Guttedar	9663150555
77	GOK 9	Kalaburgi	Kalaburgi	Harasur	Mallinath Amruthappa Battali	9901414299
78	GOK 10	Kalaburgi	Kalaburgi	Harasur	Vasu Rathod	
79	BIRD 1	Yadagiri	Yadagiri	Belagundi	Bhaskar Nagappa Metri	7259169978

Sl. No.	Agency	District	Taluk	Centre	Name of Beneficiaries	Mobile
80	BIRD 2	Yadagiri	Yadagiri	Belagundi	Mallikarjun Basavrajappa Police Patil	9964018656
81	BIRD 3	Yadagiri	Yadagiri	Belagundi	Basavaraj Sabanna Bagli	9964035050
82	BIRD 4	Yadagiri	Yadagiri	Belagundi	Bannappa Mariappa Bagali	9964018656
83	BIRD 5	Yadagiri	Yadagiri	Belagundi	Mallikarjun Basavaraj Bagali	9964217167
84	BIRD 6	Yadagiri	Yadagiri	Belagundi	Ramanna Mahadevappa Gudur	9741673009
85	BIRD 7	Yadagiri	Yadagiri	Belagundi	Anjaneya Hanumantharaya	9845148591
86	BIRD 8	Yadagiri	Yadagiri	Belagundi	Venkatesh Sannahanumantha	8747811649
87	BIRD 9	Yadagiri	Yadagiri	Belagundi	Basavaraj Saranappa Gadad	8197149591
88	BIRD 10	Yadagiri	Yadagiri	Belagundi	Mohammed Ali Kadar saab inamdar	9741673690
89	BIRD 11	Yadagiri	Surapura	Geddalamari	Sangappa Basappa Kumbar	9902036217
90	BIRD 12	Yadagiri	Surapura	Geddalamari	Amaraiiah Matapathi	9686749981
91	BIRD 13	Yadagiri	Surapura	Geddalamari	Somappa Ramappa Kakkera	9980490650
92	BIRD 14	Yadagiri	Surapura	Geddalamari	Sangaiah Channabasaiah Hiremat	9611364791
93	BIRD 15	Yadagiri	Surapura	Geddalamari	Sanganna Basavanagouda Biradar	9845841838
94	BIRD 16	Yadagiri	Surapura	Geddalamari	Devendrappa Basappa Badiger	9964086147
95	BIRD 17	Yadagiri	Surapura	Geddalamari	Basanna Chandrappa Biradar	9902439556
96	BIRD 18	Yadagiri	Surapura	Geddalamari	Gaddappa Basavantha Rai	9901572414
97	BIRD 19	Yadagiri	Surapura	Geddalamari	Thandappa Hanumantharai Biradar	9741592253
98	BIRD 20	Yadagiri	Surapura	Geddalamari	Amarappa Kavalappa Kamatgi	9902190963
99	BIRD 21	Yadagiri	Sahapur	M Kollur	Mallikarjun Ogadamballi Tailor	8496037395
100	BIRD 22	Yadagiri	Sahapur	M Kollur	Rayanna Biralu	9901318732
101	BIRD 23	Yadagiri	Sahapur	M Kollur	Sadashiva Hanumantharaya Bovi	9901099301
102	BIRD 24	Yadagiri	Sahapur	M Kollur	Chinnareddy Mari Patil	9483709036
103	BIRD 25	Yadagiri	Sahapur	M Kollur	Raju	9845678853
104	BIRD 26	Yadagiri	Sahapur	M Kollur	H Chinnareddy Siddagowda	9481087929
105	BIRD 27	Yadagiri	Sahapur	M Kollur	Shivamma Devappa	
106	BIRD 28	Yadagiri	Sahapur	M Kollur	Shanthappa Pere	9482115450
107	BIRD 29	Yadagiri	Sahapur	M Kollur	Yankareddy Mokashi	9663297395
108	BIRD 30	Yadagiri	Sahapur	M Kollur	Hanumaiah Malliah	9900770776
109	GOK 1	Yadagiri	Yadagiri	Yelheri	Hanumanthappa Madarkal Mane	8970732150
110	GOK 2	Yadagiri	Yadagiri	Yelheri	Mallapa Nagalapur Mallappa	8970580782
111	GOK 3	Yadagiri	Yadagiri	Yelheri	Nabi Saab Jalal Saab	8941419668
112	GOK 4	Yadagiri	Yadagiri	Yelheri	Ningappa Nandihalli	9964457462
113	GOK 5	Yadagiri	Yadagiri	Yelheri	Yenka reddy Sharannappa Anka reddy	8722140058
114	GOK 6	Yadagiri	Yadagiri	Yelheri	Shekarappa Shankarappa Kanekal	9845558703
115	GOK 7	Yadagiri	Yadagiri	Yelheri	Virupaksha Reddy Basappa Kanekal	
116	GOK 8	Yadagiri	Yadagiri	Yelheri	Parvatha Reddy Basavarappa Gadekar	9845141134
117	GOK 9	Yadagiri	Yadagiri	Yelheri	Kesha Siteri	9880588203
118	GOK 10	Yadagiri	Yadagiri	Yelheri	Santhosh Punya pawar	9632232268
119	BIRD 1	Bellary	Siruguppa	Havinahal	U.Doddabasappa	9731235337
120	BIRD 2	Bellary	Siruguppa	Havinahal	Siddalingamma	9901138782

Sl. No.	Agency	District	Taluk	Centre	Name of Beneficiaries	Mobile
121	BIRD 3	Bellary	Siruguppa	Havinahal	Khaja Hussainsab	9164236414
122	BIRD 4	Bellary	Siruguppa	Havinahal	Sunkaiah Manur	--
123	BIRD 5	Bellary	Siruguppa	Havinahal	Dodda Mareppa	9741705153
124	BIRD 6	Bellary	Siruguppa	Havinahal	Sreenivasa Rao	9972593149
125	BIRD 7	Bellary	Siruguppa	Havinahal	Janaki Ramaraju	9980445223
126	BIRD 8	Bellary	Siruguppa	Havinahal	Pedda Raju	9008464567
127	BIRD 9	Bellary	Sandur	Nidagurthi	Kotreshachari	7760297154
128	BIRD 10	Bellary	Sandur	Nidagurthi	Eranna	8495051255
129	BIRD 11	Bellary	Sandur	Nidagurthi	Prakash	9164778450
130	BIRD 12	Bellary	Sandur	Nidagurthi	Sharana	9591112168
131	BIRD 13	Bellary	Sandur	Nidagurthi	Channabasappa	9900097240
132	BIRD 14	Bellary	Sandur	Nidagurthi	Angadi Mallappa	7026864021
133	BIRD 15	Bellary	Hospet	Nidagurthi	Shivaraj	9535453764
134	BIRD 16	Bellary	H.B.Halli	Mmavinahalli	Mangalagouri	9902938334
135	BIRD 17	Bellary	H.B.Halli	Mmavinahalli	Hanumanthappa	9148933797
136	BIRD 18	Bellary	H.B.Halli	Mmavinahalli	K.Askok	9901770233
137	BIRD 19	Bellary	H.B.Halli	Mmavinahalli	Arnunappa	9535559800
138	BIRD 20	Bellary	H.B.Halli	Mmavinahalli	Hanumanthappa	--
139	BIRD 21	Bellary	H.B.Halli	Mmavinahalli	B.Kumaraswamy	9481566885
140	BIRD 22	Bellary	Hadagalli	N.Basapura	Manjunath	8105690808
141	BIRD 23	Bellary	Hadagalli	N.Basapura	Sajji Channappa	7259424624
142	BIRD 24	Bellary	Hadagalli	N.Basapura	Sajji Nagappa	9880231866
143	BIRD 25	Bellary	Hadagalli	N.Basapura	Suresh	9980979824
144	BIRD 26	Bellary	Hadagalli	N.Basapura	Savithramma	--
145	BIRD 27	Bellary	Hadagalli	N. Basapura	Prakash	8197435453
146	BIRD 28	Bellary	Hadagalli	N. Basapura	Mahanthesh	8139970018
147	BIRD 29	Bellary	Kudligi	Sunkadakallu	Banni Gouda	9901929957
148	BIRD 30	Bellary	Kudligi	Sunkadakallu	C.Jathappa	8749056556
149	BIRD 31	Bellary	Kudligi	Sunkadakallu	Basanna	9844587179
150	BIRD 32	Bellary	Kudligi	Sunkadakallu	Revanasiddappa	9901500389
151	BIRD 33	Bellary	Kudligi	Sunkadakallu	C.Thippanna	9611523949
152	BIRD 34	Bellary	Kudligi	Sunkadakallu	Ujjinappa	9731798272
153	KMF 1	Bellary	Hadagalli	Uttangi	Manjunath	9739637927
154	KMF 2	Bellary	Hadagalli	Uttangi	G.Somashekar	9731746779
155	KMF 3	Bellary	Hadagalli	Uttangi	N.Umapathi	9590504541
156	KMF 4	Bellary	Hadagalli	Uttangi	Kotragouda	9901554667
157	KMF 5	Bellary	Hadagalli	Uttangi	P.Shankrappa	9972641727
158	KMF 6	Bellary	Hadagalli	Uttangi	N.C.Gangappa	--
159	KMF 7	Bellary	Hadagalli	Uttangi	C.Chandra Gouda	8970389581
160	KMF 8	Bellary	Hadagalli	Uttangi	Y.Rudrappa	--
161	KMF 9	Bellary	Hadagalli	Uttangi	K.Basavaraj	9886476936
162	KMF 10	Bellary	Hadagalli	Uttangi	Jangli Kotresh	--
163	KMF 11	Bellary	Hadagalli	Uttangi	A.Shravanakumar	9611469886

Sl. No.	Agency	District	Taluk	Centre	Name of Beneficiaries	Mobile
164	KMF 12	Bellary	Hadagalli	Uttangi	H.Prakash	9902713674
165	GOK 1	Bellary	Hadagalli	H.Mallanakere	Nagappa	9611440013
166	GOK 2	Bellary	Hadagalli	H.Mallanakere	Pakkera Reddy	9886887852
167	GOK 3	Bellary	Hadagalli	H.Mallanakere	Gavisidda Reddy	9901554537
168	GOK 4	Bellary	Hadagalli	H.Mallanakere	Sanna Hanumanthappa	9008265088
169	GOK 5	Bellary	Hadagalli	H.Mallanakere	T.G.Parasuram	7829079097
170	GOK 6	Bellary	Hadagalli	H.Mallanakere	Ankli Hanumanna	--
171	GOK 7	Bellary	Hadagalli	H.Mallanakere	D.Ramachandrappa	9902378255
172	GOK 8	Bellary	Hadagalli	H.Mallanakere	H.Prakash	9731592238
173	GOK 9	Bellary	Hadagalli	H.Mallanakere	Hologundi Ningappa	--
174	GOK 10	Bellary	Hadagalli	H.Mallanakere	Makeri Srisaila	9538988645
175	GOK 11	Bellary	Hadagalli	H.Mallanakere	Morigeri Huligamma	9742617533
176	GOK 12	Bellary	Hadagalli	H.Mallanakere	Kariyappa Eti	--
177	GOK 13	Bellary	Hadagalli	H.Mallanakere	Ningappa Kenguri	8105427332
178	BIRD 1	Raichur	Raichur	Ganadhal	C narasimha Bheemaiah	
179	BIRD 2	Raichur	Raichur	Ganadhal	Veerabhadraraiha Mallaiah Swamy	9901332882
180	BIRD 3	Raichur	Raichur	Ganadhal	S Anjaneya Bheemaiah S	9663442870
181	BIRD 4	Raichur	Raichur	Ganadhal	B Pranesh Govindappa Buddaigol	9632375116
182	BIRD 5	Raichur	Raichur	Ganadhal	Ganesh Venkat ramaiah Bajappa	9502433079
183	BIRD 6	Raichur	Raichur	Ganadhal	Mahdevappa Ramanna Madiwala	
184	BIRD 7	Raichur	Raichur	Ganadhal	Suryanarayan Bendikai Reddy	
185	BIRD 8	Raichur	Raichur	Ganadhal	C H Nageshwara Rao	9480309956
186	BIRD 9	Raichur	Raichur	Ganadhal	Veeran Gouda Nagan Gouda	9482314155
187	BIRD 10	Raichur	Raichur	Ganadhal	K V R Prasad	9449243461
188	BIRD 11	Raichur	Manvi	Rajolli	R Lingappa Bhimaiah Dolayya	9880812128
189	BIRD 12	Raichur	Manvi	Rajolli	D Venkatesh D Narasanna	
190	BIRD 13	Raichur	Manvi	Rajolli	Gundaiah Hanumaiah Dubbaigar	
191	BIRD 14	Raichur	Manvi	Rajolli	Krishnappa Mallaiah Sunteppanavar	
192	BIRD 15	Raichur	Manvi	Rajolli	Shivaraja Thimmappa Gorekanti	
193	BIRD 16	Raichur	Manvi	Rajolli	Thimmaiah Basavaraja	8150921641
194	BIRD 17	Raichur	Manvi	Rajolli	Nagendrappa Nagaiah	
195	BIRD 18	Raichur	Manvi	Rajolli	RamannaKadappa Kurbur	9611318926
196	BIRD 19	Raichur	Manvi	Rajolli	Mallikarjun Shivanna Kurbur	
197	BIRD 20	Raichur	Manvi	Rajolli	Srinivas Anjaneya Tirla	
198	BIRD 21	Raichur	Manvi	Rajolli	Venkatesh Ramanna	7760889170
199	BIRD 22	Raichur	Devdurga	Ramdurga	Adeppa Basanna Gouda Police patil	9845720978
200	BIRD 23	Raichur	Devdurga	Ramdurga	Timmanna Mallaiah Madiwal	9901108983
201	BIRD 24	Raichur	Devdurga	Ramdurga	Rangappa Sannanna Basanna Uppar	
202	BIRD 25	Raichur	Devdurga	Ramdurga	Basavaraj Parasappa Chalavadi	8861394010
203	BIRD 26	Raichur	Devdurga	Ramdurga	Arul Raj	9449341451
204	BIRD 27	Raichur	Devdurga	Ramdurga	Gangappa Basanna Jalagivar	
205	BIRD 28	Raichur	Devdurga	Ramdurga	Yellappa Govindappa Burrar	

Sl. No.	Agency	District	Taluk	Centre	Name of Beneficiaries	Mobile
206	BIRD 29	Raichur	Devdurga	Ramdurga	Gowrish Iswariah Swamy	9611092888
207	BIRD 30	Raichur	Devdurga	Ramdurga	Rangappa Yellappa	
208	BIRD 31	Raichur	Devdurga	Ramdurga	Iren Gowda Basanna Gowda	
209	KMF 1	Raichur	Raichur	Venkatagiri Camp	Surya Babu	
210	KMF 2	Raichur	Raichur	Venkatagiri Camp	Krishna G	9980777102
211	KMF 3	Raichur	Raichur	Venkatagiri Camp	Raghu Babu	9743775552
212	KMF 4	Raichur	Raichur	Venkatagiri Camp	G Suryanarayana	9916989397
213	KMF 5	Raichur	Raichur	Venkatagiri Camp	K Sathish	9900229611
214	KMF 6	Raichur	Raichur	Venkatagiri Camp	B Subba Rao	9945405645
215	KMF 7	Raichur	Raichur	Venkatagiri Camp	A Sriramamurthy	9844161518
216	KMF 8	Raichur	Raichur	Venkatagiri Camp	G N Raghavendra	9663599972
217	KMF 9	Raichur	Raichur	Venkatagiri Camp	S Sathyanarayana	9686320720
218	KMF 10	Raichur	Raichur	Venkatagiri Camp	B Srinivas	
219	GOK 1	Raichur	Raichur	Kalmala	Shankarappa	
220	GOK 2	Raichur	Raichur	Kalmala	Virupakshi	
221	GOK 3	Raichur	Raichur	Kalmala	Lingaiah	9902495924
222	GOK 4	Raichur	Raichur	Kalmala	Bhimanna	9972165329
223	GOK 5	Raichur	Raichur	Kalmala	shivashankar	9880266495
224	GOK 6	Raichur	Raichur	Kalmala	Sandu Hulige Amma	
225	GOK 7	Raichur	Raichur	Kalmala	Suresh	9035277692
226	GOK 8	Raichur	Raichur	Kalmala	Driver Laxmana	9731544308
227	GOK 9	Raichur	Raichur	Kalmala	Siddalingappa	9901048507
228	BIRD 1	Vijayapura	Vijayapura	Kumte	Ramesh Navi Revanna Siddappa	9740789308
229	BIRD 2	Vijayapura	Vijayapura	Kumte	Mahadev Dhannyal	9632202274
230	BIRD 3	Vijayapura	Vijayapura	Kumte	Siddaram Harnal	9902235050
231	BIRD 4	Vijayapura	Vijayapura	Kumte	Ashok Hosatti	9900663378
232	BIRD 5	Vijayapura	Vijayapura	Kumte	Muthappa Hirekurbur	9632967095
233	BIRD 6	Vijayapura	Vijayapura	Kumte	Basappa Harnad	
234	BIRD 7	Vijayapura	Vijayapura	Kumte	Suresh Bheemshankar Badiger	9686462195
235	BIRD 8	Vijayapura	Vijayapura	Kumte	Sadashiv P Dhanyal	
236	BIRD 9	Vijayapura	Indi	Hadalasanga	S T Patil	9844909575
237	BIRD 10	Vijayapura	Indi	Hadalasanga	Basanna Siddappa Yelladgi	9902420595
238	BIRD 11	Vijayapura	Indi	Hadalasanga	Vitoba Chintamani Punekar	8722539388
239	BIRD 12	Vijayapura	Indi	Hadalasanga	Santosh Patil	9844900329
240	BIRD 13	Vijayapura	Indi	Hadalasanga	Jayasri Rajkumar Gogowad	9900947400
241	BIRD 14	Vijayapura	B Bagewadi	Ballothi	Kallappa Maled	9845941525
242	BIRD 15	Vijayapura	B Bagewadi	Ballothi	Basavalingappa Hucchappa Hebbi	9900876886
243	BIRD 16	Vijayapura	B Bagewadi	Ballothi	D N Banagond	9880862351
244	BIRD 17	Vijayapura	B Bagewadi	Ballothi	Rayappa B Avarsanga	9731963395

Sl. No.	Agency	District	Taluk	Centre	Name of Beneficiaries	Mobile
245	BIRD 18	Vijayapura	B Bagewadi	Ballothi	P C Bawa	9901557172
246	BIRD 19	Vijayapura	B Bagewadi	Ballothi	B G Patil	9972695165
247	BIRD 20	Vijayapura	B Bagewadi	Ballothi	Shrishaila Kenchappa Ganiger	7353718802
248	BIRD 21	Vijayapura	B Bagewadi	Ballothi	Siddappa D Balagonda	9448789651
249	BIRD 22	Vijayapura	Sindhagi	Korahalli	Yellalinga Pujari	9741798717
250	BIRD 23	Vijayapura	Sindhagi	Korahalli	Mallanna Gowda Ramanna Mujagowda	9731298961
251	BIRD 24	Vijayapura	Sindhagi	Korahalli	M G Nadaf Moulasaab	9980696871
252	BIRD 25	Vijayapura	Sindhagi	Korahalli	S C Mattimadu	9741914089
253	BIRD 26	Vijayapura	Sindhagi	Korahalli	Mallappa Bheemanna	8550010226
254	BIRD 27	Vijayapura	Sindhagi	Korahalli	Nazir saab Nadaf	7506518825
255	BIRD 28	Vijayapura	Sindhagi	Korahalli	ImamaSaab Nadaf	9945562451
256	BIRD 29	Vijayapura	Sindhagi	Korahalli	Bhutali B Pujari	9741798717
257	BIRD 30	Vijayapura	Muddhebihal	Kollura	Girmallappa Thippanna Bidarakundi	9482371990
258	BIRD 31	Vijayapura	Muddhebihal	Kollura	Ashok S Hebbar	9900432353
259	BIRD 32	Vijayapura	Muddhebihal	Kollura	Moneshwar Sangappa Bidarakundi	9845062939
260	BIRD 33	Vijayapura	Muddhebihal	Kollura	Sanganna Basappa Chaligere	9741140730
261	BIRD 34	Vijayapura	Muddhebihal	Kollura	Shivappa Walikar	9663154432
262	BIRD 35	Vijayapura	Muddhebihal	Kollura	Thammanna Gowda Biradar	9611798183
263	KMF 1	Vijayapura	Vijayapura	Takkalike	Sachin Govind Rathod	9663966346
264	KMF 2	Vijayapura	Vijayapura	Takkalike	Mahadevi Suryavamshi	9686245437
265	KMF 3	Vijayapura	Vijayapura	Takkalike	Shivappa Laxman Chalavadi	9880162569
266	KMF 4	Vijayapura	Vijayapura	Takkalike	Natha Suryavamshi	9900482715
267	KMF 5	Vijayapura	Vijayapura	Takkalike	Atma Katkar	9632124371
268	KMF 6	Vijayapura	Vijayapura	Takkalike	G M Patil	9972779370
269	KMF 7	Vijayapura	Vijayapura	Takkalike	Shivanand Holasangh	9980893701
270	KMF 8	Vijayapura	Vijayapura	Takkalike	A M Patil	9972779370
271	KMF 9	Vijayapura	Vijayapura	Takkalike	S O Holasangh	9980893701
272	KMF 10	Vijayapura	Vijayapura	Takkalike	Digambar S Ghatgi	9663966346
273	GOK 1	Vijayapura	Vijayapura	Tikota	Mallikarjun Sabu Gulgangi	9900715285
274	GOK 2	Vijayapura	Vijayapura	Tikota	Dnyaneshwar R Bhosla	9036930296
275	GOK 3	Vijayapura	Vijayapura	Tikota	Sabu Sangappa Bandi	8951466765
276	GOK 4	Vijayapura	Vijayapura	Tikota	Muthu Guddodagi	9482234294
277	GOK 5	Vijayapura	Vijayapura	Tikota	Irappa Kadappa Gudadogi	9482234294
278	GOK 6	Vijayapura	Vijayapura	Tikota	Srishaila S Yelageri	7760348841
279	GOK 7	Vijayapura	Vijayapura	Tikota	Gowdappa Hogeppa Jalageri	9902722973
280	GOK 8	Vijayapura	Vijayapura	Tikota	Suresh Chandrashekar Jalageri	9972691444
281	GOK 9	Vijayapura	Vijayapura	Tikota	Siddamma Shivanada Jalageri	9945367776
282	GOK 10	Vijayapura	Vijayapura	Tikota	Eshwar Hogappa Jalageri	9611866279
283	BIRD 1	Bagalkote	Hunagunda	Vadageri	Basavaraj Kabbarigi	7760420511
284	BIRD 2	Bagalkote	Hunagunda	Vadageri	Hanumanthagouda Goudar	--
285	BIRD 3	Bagalkote	Hunagunda	Vadageri	Parasappa Hirekurubar	7353982184
286	BIRD 4	Bagalkote	Hunagunda	Vadageri	Ramesh Santhigeri	7760328688

Sl. No.	Agency	District	Taluk	Centre	Name of Beneficiaries	Mobile
287	BIRD 5	Bagalkote	Hunagunda	Vadageri	Kariyappa Sadigeri	--
288	BIRD 6	Bagalkote	Hunagunda	Vadageri	Nagaraj Hirekurubar	--
289	BIRD 7	Bagalkote	Hunagunda	Vadageri	Hanumantha Vaggar	--
290	BIRD 8	Bagalkote	Hunagunda	Vadageri	Kariyappa Gurikar	7259924282
291	BIRD 9	Bagalkote	Hunagunda	Vadageri	H.B.Kallimath	9740601259
292	BIRD 10	Bagalkote	Hunagunda	Vadageri	Muddappa Pujar	--
293	BIRD 11	Bagalkote	Badami	Kerakalamatti	Nijagunappa	9620485284
294	BIRD 12	Bagalkote	Badami	Kerakalamatti	Pandappa H Nagireddy	--
295	BIRD 13	Bagalkote	Badami	Kerakalamatti	Bharamappa Kabadada	9008976559
296	BIRD 14	Bagalkote	Badami	Kerakalamatti	Shivappa T Hadapad	9535641784
297	BIRD 15	Bagalkote	Badami	Kerakalamatti	Holiyappa Angadi	7259220453
298	BIRD 16	Bagalkote	Badami	Kerakalamatti	Ningappa Kabadada	--
299	BIRD 17	Bagalkote	Badami	Kerakalamatti	Suresh Hanapur	9448465691
300	BIRD 18	Bagalkote	Badami	Kerakalamatti	N.D.Hachanur	9632730630
301	BIRD 19	Bagalkote	Badami	Kerakalamatti	H.B.Yadihalli	--
302	BIRD 20	Bagalkote	Badami	Kerakalamatti	Aravindappa Mugalkod	8197203134
303	BIRD 21	Bagalkote	Biligi	Yelliguthi	Parvathavva Kamar	--
304	BIRD 22	Bagalkote	Biligi	Yelliguthi	Siddanagouda Sunagad	7760316845
305	BIRD 23	Bagalkote	Biligi	Yelliguthi	Appanna S Kumar	--
306	BIRD 24	Bagalkote	Biligi	Yelliguthi	Hussain Sab Dalawai	7337816867
307	BIRD 25	Bagalkote	Biligi	Yelliguthi	Somappa Ingunnanavar	9900922216
308	BIRD 26	Bagalkote	Biligi	Yelliguthi	Shankraiah V Kambli	--
309	BIRD 27	Bagalkote	Biligi	Yelliguthi	V.L.Gowdar	9741976562
310	BIRD 28	Bagalkote	Biligi	Yelliguthi	Dongari Sab Dalawai	--
311	BIRD 29	Bagalkote	Biligi	Yelliguthi	Ramappa S Hurigajji	8971233462
312	BIRD 30	Bagalkote	Biligi	Yelliguthi	Yallappa S Halabar	9449754064
313	KMF 1	Bagalkote	Biligi	Chikkalagundi	Totappa Kothu	9901810375
314	KMF 2	Bagalkote	Biligi	Chikkalagundi	Amruthappa Nenenni	8970642811
315	KMF 3	Bagalkote	Biligi	Chikkalagundi	Mallappa Kempalingannavar	9900213345
316	KMF 4	Bagalkote	Biligi	Chikkalagundi	Mudiyappa Naikar	9980339365
317	KMF 5	Bagalkote	Biligi	Chikkalagundi	Geetha Kempalingannavar	9945216367
318	KMF 6	Bagalkote	Biligi	Chikkalagundi	Veeresh S Koth	9972540221
319	KMF 7	Bagalkote	Biligi	Chikkalagundi	Shivananda Kempalingannavar	8197904317
320	KMF 8	Bagalkote	Biligi	Chikkalagundi	Appanna Benakatti	9535507213
321	KMF 9	Bagalkote	Biligi	Chikkalagundi	Basappa Kempalingannavar	9902685546
322	KMF 10	Bagalkote	Biligi	Chikkalagundi	Hanumantha Nenenni	8105730677
323	GOK 1	Bagalkote	Biligi	Katariki	Ningappa Kuchanur	9945410213
324	GOK 2	Bagalkote	Biligi	Katariki	Ramanna Vajramatta	9632734540
325	GOK 3	Bagalkote	Biligi	Katariki	Yamunappa Bhushan	--
326	GOK 4	Bagalkote	Biligi	Katariki	Ashok N Patil	9972363062
327	GOK 5	Bagalkote	Biligi	Katariki	Arjun Ganigar	8151055905
328	GOK 6	Bagalkote	Biligi	Katariki	Mallappa S Sullad	9901623784
329	GOK 7	Bagalkote	Biligi	Katariki	Ningappa S Jambagi	9008940632



Sl. No.	Agency	District	Taluk	Centre	Name of Beneficiaries	Mobile
330	GOK 8	Bagalkote	Biligi	Katariki	Sangappa T Jambagi	9901954086
331	GOK 9	Bagalkote	Biligi	Katariki	Prakash K Patil	9743207726
332	GOK 10	Bagalkote	Biligi	Katariki	Mallappa T Koti	9591064740
333	GOK 11	Bagalkote	Biligi	Katariki	Basappa T Koti	7760714145
334	GOK 12	Bagalkote	Biligi	Katariki	Shivappa B Janematti	7760818264
335	BIRD 1	Gadag	Mundarigi	Kadampura	Basavaraj	9902395086
336	BIRD 2	Gadag	Mundarigi	Kadampura	G.B.Sankanagouda	9632428511
337	BIRD 3	Gadag	Mundarigi	Kadampura	Khasim Sab	9591336720
338	BIRD 4	Gadag	Mundarigi	Kadampura	Basappa Lakkundi	9741268392
339	BIRD 5	Gadag	Mundarigi	Kadampura	Takana Gouda	9632095712
340	BIRD 6	Gadag	Mundarigi	Kadampura	Shivabasavana Gouda	9743170202
341	BIRD 7	Gadag	Mundarigi	Kadampura	Siddalingappa	8904597730
342	BIRD 8	Gadag	Mundarigi	Kadampura	SS Hosamani	9731128895
343	BIRD 9	Gadag	Mundarigi	Kadampura	Virupakshappa	--
344	BIRD 10	Gadag	Mundarigi	Kadampura	Santhosh	8748986506
345	BIRD 11	Gadag	Rona	Hunagundi	H.K.Pujar	9980177056
346	BIRD 12	Gadag	Rona	Hunagundi	Devappa Korannanavar	9591356984
347	BIRD 13	Gadag	Rona	Hunagundi	Mallappa Hugar	7898841732
348	BIRD 14	Gadag	Rona	Hunagundi	Balappa Koppad	9980711302
349	BIRD 15	Gadag	Rona	Hunagundi	Bhirappa Kambli	9538193319
350	BIRD 16	Gadag	Rona	Hunagundi	Eswaraiah Vastrad	--
351	BIRD 17	Gadag	Rona	Hunagundi	Hangirappa	9900129696
352	BIRD 18	Gadag	Rona	Hunagundi	Kalakappa Handi	8105569627
353	BIRD 19	Gadag	Rona	Hunagundi	Srinivas Kulakarni	8762105892
354	BIRD 20	Gadag	Rona	Hunagundi	Mallappa Sullad	8762499864
355	BIRD 21	Gadag	Sirahatti	Hullura	Basappa Ganigar	9164470834
356	BIRD 22	Gadag	Sirahatti	Hullura	Shakanna	9663457830
357	BIRD 23	Gadag	Sirahatti	Hullura	Shambhulingaiah	9972392095
358	BIRD 24	Gadag	Sirahatti	Hullura	Erappa Magadi	9945650902
359	BIRD 25	Gadag	Sirahatti	Hullura	Basappa Meti	9187227486
360	BIRD 26	Gadag	Sirahatti	Hullura	Mallikarjuna	--
361	BIRD 27	Gadag	Sirahatti	Hullura	Manjunath Havalkeri	9611682393
362	BIRD 28	Gadag	Sirahatti	Hullura	Neelappa Madivalar	9964544702
363	BIRD 29	Gadag	Sirahatti	Hullura	Parasappa Hathigeri	7259660364
364	BIRD 30	Gadag	Sirahatti	Hullura	Ramesh Hulikoti	9740515181
365	KMF 1	Gadag	Gadag	Kanavi	Shivanagouda Patil	--
366	KMF 2	Gadag	Gadag	Kanavi	Shambhulingappa K	9482178865
367	KMF 3	Gadag	Gadag	Kanavi	SS Patil	9482611055
368	KMF 4	Gadag	Gadag	Kanavi	Bhimappa Talawar	8970415452
369	KMF 5	Gadag	Gadag	Kanavi	Srikanthagouda Patil	7353937603
370	KMF 6	Gadag	Gadag	Kanavi	V.S.Nagaloti	08372285004
371	KMF 7	Gadag	Gadag	Kanavi	Veeresh M Nagaloti	9481853794
372	KMF 8	Gadag	Gadag	Kanavi	Parappa Bolanavar	9902364877

Sl. No.	Agency	District	Taluk	Centre	Name of Beneficiaries	Mobile
373	KMF 9	Gadag	Gadag	Kanavi	Sangappa Dindur	--
374	KMF 10	Gadag	Gadag	Kanavi	Anand Hadapad	7090836255
375	GOK 1	Gadag	Gadag	Hulikote	Hussain Sab Thanedar	--
376	GOK 2	Gadag	Gadag	Hulikote	Rajendra Dugowdar	9448139060
377	GOK 3	Gadag	Gadag	Hulikote	Devasab Annigeri	9036616373
378	GOK 4	Gadag	Gadag	Hulikote	Krishna Lambani	9611292618
379	GOK 5	Gadag	Gadag	Hulikote	Lakshnavva Pujar	--
380	GOK 6	Gadag	Gadag	Hulikote	Ramesh Lambani	9845114971
381	GOK 7	Gadag	Gadag	Hulikote	Smt.Revavva Maradur	9449772728
382	GOK 8	Gadag	Gadag	Hulikote	Sreenivasa Gouda N	9448119023
383	GOK 9	Gadag	Gadag	Hulikote	Prabhiah Kadadallimath	8970882932
384	GOK 10	Gadag	Gadag	Hulikote	Basavareddy Thirlapur	9964080557

District wise and agency wise summary of beneficiaries interviewed by the study team.

District	BIRD-K	GOK	KMF	Grand Total
Bagalkote	30	12	10	52
Bellary	34	13	12	59
Gadag	30	10	10	50
Kalaburgi	48	10	20	78
Raichur	31	9	10	50
Vijayapura	35	10	10	55
Yadagiri	30	10	0	40
<b>Grand Total</b>	<b>238</b>	<b>74</b>	<b>72</b>	<b>384</b>

## Appendix 1

### Photo Gallery

#### Kalaburgi District

	
<p>KMF AI center Hodluru Aland Taluk</p>	<p>BIRD-K AI Center, Suntanuru, Aland</p>
	
<p>Indigenous progeny-Muthkoda, Jewargi</p>	<p>BIRD-K AI Center, Suntanuru, Aland</p>

#### Yadagiri District

	
<p>DAH&amp;VS Center, Yelheri, Yadagiri Taluk</p>	<p>Cryocan, Belagundi Yadagiri Taluk</p>
	
<p>BIRD-K AI Center, Belagundi, Yadagiri Taluk</p>	<p>BIRD-K AI Cenetr Geddamari, Surapura Taluk</p>

Ballari District



BIRD-K AI Center Havinal, Siraguppa Taluk



BIRD-K AI Center, Nidagurthi, Sanduru Taluk



BIRD-K AI Center, Sunkadakallu, Kudligi Taluk



KMF AI Center, Uttangi, H Hadagali Taluk

**Raichur District**



BIRD-K AI Center, Ramadurga, Devadurga Taluk



BIRD-K AI Center, Ramadurga, Devadurga Taluk



BIRD-K AI Center, Ramadurga, Devadurga Taluk



BIRD-K AI Center, Rajolli, Manvi Taluk

**Vijayapura District**



DAH&VS center, Tikota, Vijayapura Taluk



BIRD-K AI Center, Baluti, B. Bagewadi Taluk



BIRD-K AI Center, Hadalasanga, Indi Taluk



KMF AI Center Takkalike, Vijayapura Taluk

**Bagalakote District**



KMF AI Center, Chikkalagundi, Bilagi Taluk



DAH&VS Center Katarki, Bilagi Taluk



BIRD-K AI Center Kerakalamatti, Badami Taluk



BIRD-K AI Center, Yelliguthi, Hunagunda Taluk

Gadag District



DAH&VS Center Hulikoti, Gadag Taluk



BIRD-K center, Hullur, Sirahatti Taluk

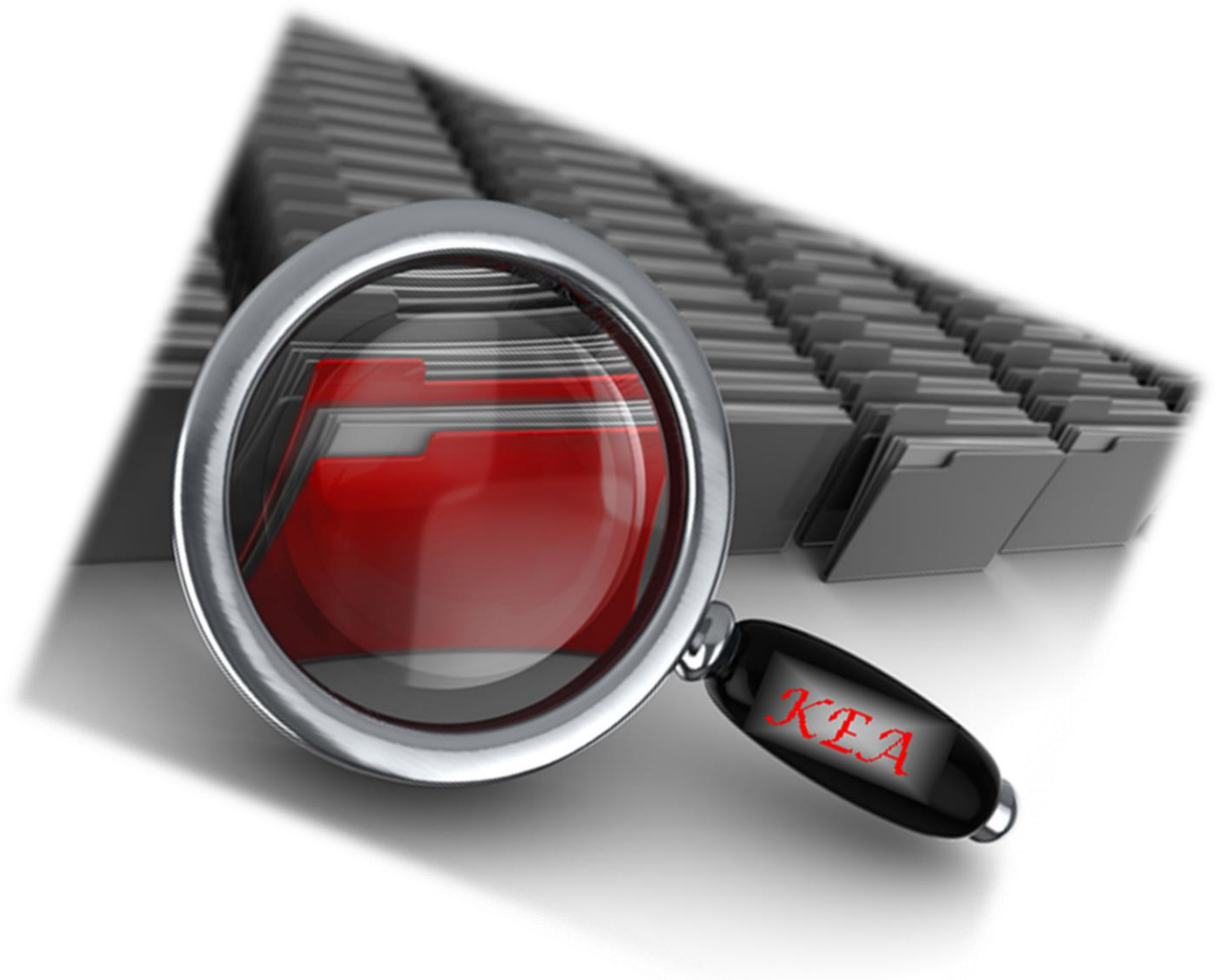


BIRD-K AI Center Hunagundi, Rona Taluk



BIRD-K AI Center Kadampura, Mundaragi Taluk





TRA- Jan-2015 IRA- Dec-2015 DRA- May-2016 FNO- KEA 169 EVN 2015 (2)



ಕರ್ನಾಟಕ ಮೌಲ್ಯಮಾಪನ ಪ್ರಾಧಿಕಾರ  
Karnataka Evaluation Authority

**EVALUATION OF THE PERFORMANCE OF BIRD'S ARTIFICIAL  
INSEMINATION CENTRES IMPLEMENTED BY DEPARTMENT OF  
ANIMAL HUSBANDRY AND VETERINARY SERVICES**