

Landscaping of initiatives in the area of animal health, breeding services and indigenous breed development for cattle, buffalo, goats, sheep and poultry in Andhra Pradesh.

A Project of CALPI, New Delhi

REPORT

of study conducted by

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SUMMARY OF THE REPORT

THE STUDY: “Landscaping of initiatives in the area of animal health, breeding services and indigenous breed development for cattle, buffalo, goats, sheep and poultry in Andhra Pradesh.”

1. The study was undertaken to identify a) innovative non-governmental actors and initiatives that work in the areas of animal health services, b) government as well as non-governmental innovations in breeding services and c) government as well as non-governmental innovations in indigenous breed development for cattle, buffaloes, goats, sheep and poultry and indigenous breed development in the State of Andhra Pradesh.
2. This nearly six week long study mostly relied on consultation of literature, visits to various institutions and individuals in State capital and seven districts to know the performance of programmes under their charge and seek the ground level realities to the extent possible in the limited time.

INNOVATIONS IN ANIMAL HEALTH SERVICES:

3. **Paravets:** The fact that emerges from all the above experiences is that **“trained unemployed educated youth can effectively take basic veterinary health care to the farmers’ doorstep, thus expanding the livestock health services to a wider area. Such youth can also be effective lay artificial inseminators ground level livestock and extension worker.”**
4. However, some observations on the performance of paravets are -
 - a) Paravet training is not uniform at all locations and the paravet training provided by non-governmental organisations is not recognised by the Indian Veterinary Council.
 - b) There are vast differences in performance of paravets as all non-government organisations using paravets do not have similar standard of training, supervision, monitoring and follow-up of paravets.
 - c) There are apprehensions that the paravets would overreach (many already do) their brief and go for clinical practice using powerful antibiotics and other drugs. This is not desirable.
 - d) Use of indigenous medicines (Ayurveda) by paravets is not of the same status everywhere, but it is a very important traditional and economic system of treatment understood by the livestock farmers.
5. **Animal Health Camps**, are another avenue that can be used for extending animal health care services for the reason that there are ready sponsors (sponsored by government, quasi-government, cooperative and project based campaigns, by private individuals and institutions, by religious and charitable organisations, by companies etc.).
6. However, some observations on the performance of Animal Health Camps are –
 - a) They are periodic in nature.
 - b) They are not yet well integrated into the overall livestock health delivery system.
 - c) Not always good attention is paid to the ‘home-work’ with regards to the organisation of the camps resulting in glitches at the time of running them.
 - d) In general there seems to be a perpetual shortage of essential medicines (due to shortage of funds) at such camps.
 - e) Follow-up after the camps is not always evident.

BREEDING SERVICES:

In Andhra Pradesh -

7. In AP there is a well-planned breeding policy for cattle and buffaloes, though the picture with regard to small ruminants is not clear. Poultry breeding is almost entirely in the hands of big private hatcheries.

8. Reasonably good infrastructure for providing breeding services is in place, though there is always scope for improvement and augmenting budgetary provisions.
9. The institution of **Gopala Mitras** (trained unemployed educated youth) in AP three years old. There have been shortcomings in their performance, but such teething troubles could be identified and addressed to by closer supervision, follow-up by the trainer, education about heat detection – appropriate time of insemination etc. Such steps have brought improvement in their performance, in deed.

Innovation in Breeding Services -

10. The most consistent fact that emerges from the field experiences is that “**trained unemployed educated youth can effectively take AI to the farmers’ doorstep, thus expanding the breeding services to a wider area. Such youth can also be effective paravets.**”

INDIGENOUS BREED DEVELOPMENT:

In Andhra Pradesh -

11. The indigenous livestock breeds of AP are – Cattle: Ongole, Punganur, Deoni, Krishna Valley-Deccani, Hallikar and Malvi (all except Ongole are from neighbouring states); Buffaloes: Murrah, Nagpuri, Marathwada (all from other states); Sheep: Nellore and Deccani (the latter from Maharashtra); Goats: Osmanabadi and Bellary (from adjoining states actually); Poultry: Aseel.
12. Breed Development –
 - a) There is a well planned breed improvement system for Ongole breed of cattle, the pride of AP
 - b) The Punganur breed of cattle, localized to a part of Chittoor district, was conserved from a stage of near extinction
 - c) Murrah is the all purpose buffalo breed for upgrading local buffaloes bothe by government and by private breeders
 - d) Nellore breed of sheep – all its three strains, namely Brown, Jodepi and Palla – is the prime breed of AP propagated by government as well as desired by farmers;
 - e) The trend of gradual replacement of wooly Deccani breed with meaty Nellore breed in some Telangana districts is unfortunate.
 - f) Osmanabadi and Bellary are people’s breed of goat in the border districts to Maharashtra and Karnataka; but non-descript goats form the main goat population of AP
13. While all the indigenous breeds of livestock are preferred in general by the farmers and they actively cooperate in government’s efforts at breed improvement, there seems to be some reluctance for crossbred cows and high grade Murrah buffaloes by resouce poor farmers, especially in large areas with very limited livestock feed resources.

Innovation –

14. **Livestock Breeder’s Associations:** One common feature for all the breed development activities is the positive contribution of Breeder’s Associations. It is refreshing to note that the ADH / APLDA is involved in the creation and support of Livestock Breeder’s Associations. However, such associations are constrained due to lack of professional management and shortage of funds. This is especially true with regards to Sheep Breeders’ Associations as shepherds are from weaker sections.

OTHER INNOVATIONS:

15. The Andhra Pradesh Mutually Aided Cooperative Societies Act of 1995, facilitated even the village level cooperatives get powers to decide on their own policy, plans and funds utilization without seeking the approval of the Govt. Thanks to this **innovation** small farmers in dairy and small ruminant sectors, especially women, could come up with programmes for mutual assistance for the benefit of all, they being the decision makers, the benefactors, as well as the beneficiaries.

FUTURE PROSPECTS

16. From the findings of this study the following three INNOVATIONS seem to have good potential for expanding livestock development services in the field, in Andhra Pradesh, at least.
17. All the three INNOVATIONS are **organizational** in nature, a reflection on the fact that the actual field problem is to reach the technical and input services to the farmers, to the small farmers.
18. Financial and policy support for replication to these INNOVATIONS may be in order.

No.	INNOVATION	WHY IMPORTANT?	HOW TO ORGANISE?
1.	Standard training and location of local youth in villages as multipurpose Livestock Development Workers (paravets + lay inseminators + extension workers) and linking them to all line department & rural development project activities.	1. Paravets: Focus is on use of local initiative & skill and services would be need-based.	1. Policy decision.
2.	Planned and regular organisation of Animal Health Camps with sponsorship of public, private, charitable / religious and other organisations as an integrated part of the livestock health services.	2. Health camps: Integrating individuals/projects/ organisations in extending animal health services.	2. Plan to integrate into the existing system.
3.	Promotion and giving greater support and responsibility to livestock development/breeding associations as channels in extending livestock services	3. Putting responsibility in the hands of stakeholders – empowered women.	3. Training stakeholder participants – youth, women in skills, management, liaison between farmers and AHD vet.
4.	Use of women's Self Groups, as such or reorganized as coops, for channeling credit and inputs to livestock development at their own initiative	4. Use of local medicines & methods.	4. Training AHD staff to use paravets symbiotically.
		5. Integrate the above into the overall livestock services system	5. Providing funds for crucial aspects – training, medicines, supply of kits etc.

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1. INTRODUCTION

This short-duration study was undertaken to find out the features of the existing - a) Livestock Breeding Services, b) Indigenous Livestock Breed Development, and c) Livestock Health Services in the State of Andhra Pradesh (See the Map given in the next page).

Both Government and non-government innovative initiatives with respect to the first two aspects and private initiatives as regards the last aspect were the focus of this study. The scale of provision of services is dependent on the number of livestock and its composition, as well as the expanse of the State. Hence a brief note on the livestock sector of Andhra Pradesh.

1.1 Livestock Sector of AP

Livestock play a vital role in the socio-economic and cultural life of the people of Andhra Pradesh, which has some of the richest livestock resources in the country. Since Independence, the livestock sector of AP has achieved substantial growth with regards to productivity of animals, production of milk, meat and eggs, besides providing adequate health care and control of diseases. These helped in improvement of the economy of rural poor through livestock rearing.

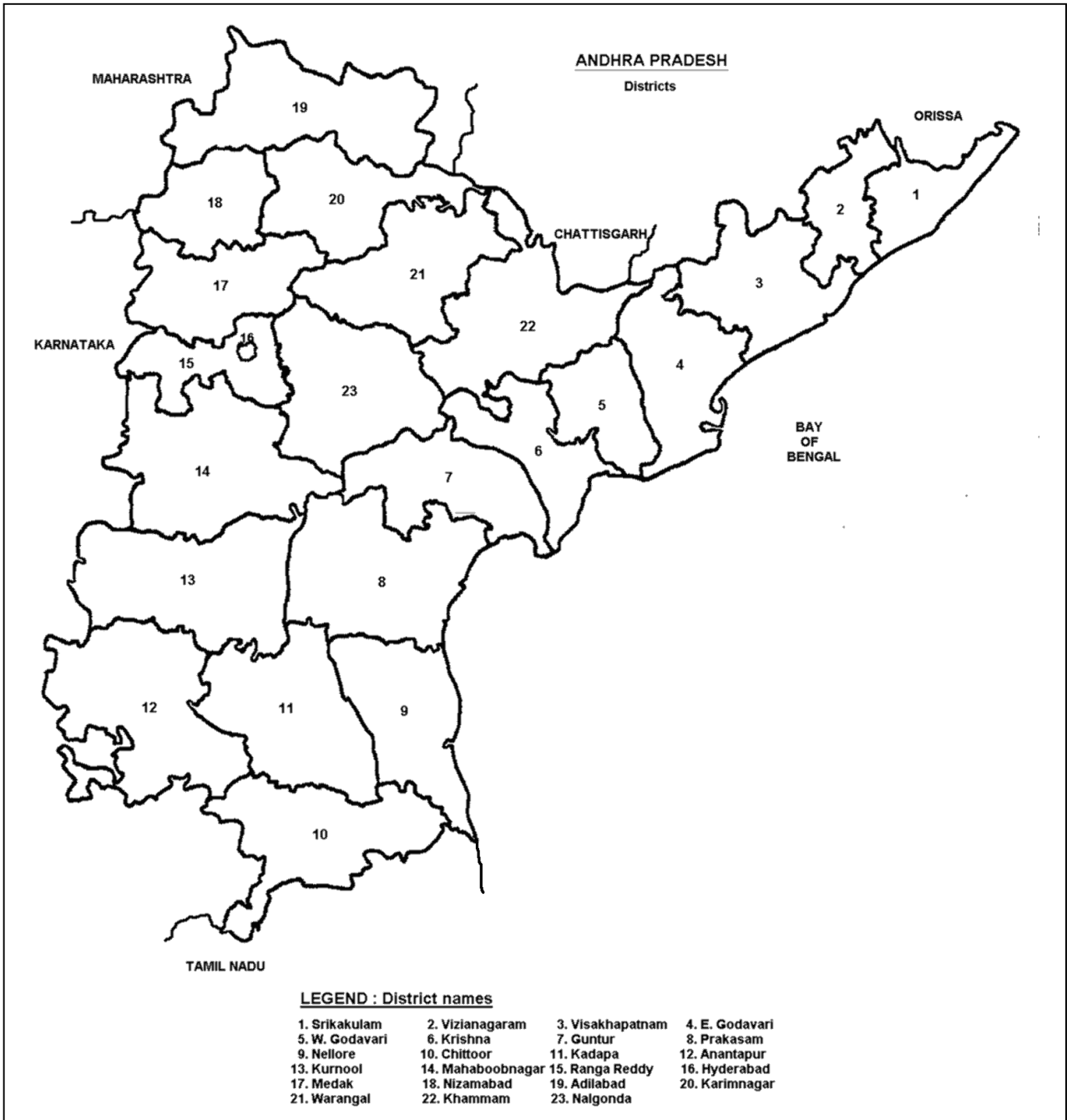
Production: The state rose to number one position in poultry and egg production in the country, though the humble backyard poultry has still got its utility. Poultry has grown into a dynamic industry producing nearly 6 billion eggs per annum. The milk production has also increased from 1.02 million tons in 1966 to 5.7 million tons by 2002. Meat production increased from 85 thousand tons in 1984-85 to 112 thousand tons by 2002. The state has plans to increase production milk, meat and eggs to 8.7 million tons, 200,000 tons and 12.5 billion, respectively, by 2020.

Health Care Services: Network of livestock health care has also improved over the years, mainly in the government sector. At present veterinary health cover is provided by 5000 field Veterinary Institutions comprising of 2588 Rural Live stock Units manned by paravets, 1642 Veterinary Dispensaries manned by Veterinary Assistant Surgeons 260 Veterinary Hospitals manned by Assistant Directors and 20 Veterinary polyclinics at District level manned by Deputy Directors that function as referral District hospitals providing specialised services in gynecology, surgery and medicine with X-ray and in-patient facilities.

For diagnosis, disease investigation and epizootological studies there are 22 Animal Health Centres functioning at District headquarters. Besides, some Mobile Veterinary Units have come up too.

The extant of and functioning livestock breeding services available in AP are discussed in the succeeding chapters. However, in view of the focus of this study on livestock breeding a breed wise livestock composition of AP is presented next. (also see the Map given below).

1.2 Cattle & Buffaloes in AP: As high as 92% male and 80% female cattle are non-descript and are mainly used for draft with some milk production (See Table given below). It may be noted that the number of crossbred female cattle are just 13% of the total females but are nearly four times the number of cattle of all the recognised indigenous breeds – a reflection on the excessive emphasis on crossbreeding and relative neglect of the native breeds over the decades.. In case of buffaloes nearly 25% of are improved variety – Murrah grades and Murrah.



Breed wise Composition of Cattle and Buffaloes in Andhra Pradesh
(As per 2001-2002 Departmental Census of the State AHD)

CATTLE			BUFFALOES		
Breed	Males	Females	Breed	Males	Females
Exotic	131,326	50,966	Murrah	14,914	46,610
Crossbred	248,180	640,724	Graded Murrah	445,444	1,919,708
Non-descript	4,523,445	3,492,808	Non-descript	1,922,940	5,732,711
Hallikar	108,587	32,080	Nagpuri	12,101	17,972
Ongole	67,445	37,468	-	-	-
Deoni	4,008	2,712	-	-	-
Tharparkar	271	399	-	-	-
Deccani (Mixed)	-	82,092	-	-	-
TOTAL	4,953,249	4,339,366	TOTAL	2,395,399	7,717,001

Thus, it is clear that a lot of breed improvement efforts are still needed to improve the quality of the livestock in the State. Matching veterinary health care services have also to be improved considerably.

1.3 Sheep & Goats: The estimated numbers of sheep and goats in 2001-2001 are, respectively, about 8 and 4.8 millions in the state. While majority of sheep are of non-descript nature, nearly a quarter of them are said to be of the Nellore breed (three strains) while one tenth of them are of the Deccani breed. The Telangana districts lying along the border (districts 15 to 21 in the Map) with the Deccani breed, the north coastal and Rayalaseema districts (7 to 13 districts) with the Nellore breed are the main sheep areas. The extreme north coastal districts (1 & 2) also possess substantial numbers of non-descript sheep. Mehaboobnagar district with more than 1 million sheep, followed by Anantapur with nearly a million are the main sheep districts.

In case of goats, except some 10% - Osmanabadi in and around Rangareddy district and Bellary in Kurnool and Kadapa districts, majority are non-descript.

1.4 Why the present exercise

The proposed landscaping exercise intends to identify innovative (technical or organizational or other) actors and initiatives that work in the areas of animal health and breeding services for cattle, buffalo, goats, sheep and poultry and indigenous breed development in the states of Andhra Pradesh, Rajasthan, Orissa and Karnataka thereby generating a learning potential as an input to the development of innovative approaches to partnerships under the CALPI programme.

General Task: As against the common departmental approach to their technical mandate, this study intends to identify the 'unusual', 'innovation' and actors with 'vision' yet having a record of successful and effective implementation. Therefore the consultant will pursue three lines of action:

- list actors of the profile described above in the fields mentioned earlier, through literature/correspondence review and/or field visits
- describe their activities and main features in a given format
- revisit selected actors and/or their organisations with the aim to describe approaches and activities in a given format

Specific tasks : The consultant is expected to complete the given formats in a manner that clarifies the overall question of the task:

- Who is promoting an innovative approach and what are the key features of that approach? Specific information, not contained in the formats, yet considered important by the consultant shall be recorded informally as well.

2 METHODOLOGY

2.1 Objective of the present study

“The proposed landscaping exercise intends to identify innovative actors and initiatives that work in the areas of animal health and breeding services for cattle, buffaloes, goats, sheep and poultry and indigenous breed development in the State of Andhra Pradesh” as a pilot study to the larger exercise in four states. The study results are expected to tell “Who is promoting an innovative approach and what are the key features of that approach? Specific information, not contained in the formats, yet considered important by the consultant shall be recorded informally as well”.

Later, it was conveyed by CALPI that, with regards to breeding services and indigenous breed development, the role of government should also be studied.

2.2 Methodology Followed

This nearly six week long study mostly relied on consultation of literature, visits to various institutions and individuals to know the performance of programmes under their charge and seek the ground level realities to the extent possible in the limited time. At least two districts from each of the main agro-climatic zones of the State were visited as per the details given in Annexure 5, which also gives information on the documents collected for the study. Hand written notes were made at the time of discussions with individuals on the subject of the study. A proforma was developed to keep the focus on the subject of the study. This was also used to keep track of all the possible fields of interventions while interviewing individuals and making notes on visits. This Proforma is presented in Annexure 6. The information so collected was studied, analysed and conclusions drawn. All such details are presented in this Report.

CALPI provided model proformas in which the information was to be provided separately for each species. In view of the fact that most livestock development / health care initiatives cover all the species, albeit the bovines dominate, information for all the species is provided in the same proforma with appropriate notes on species focus.

3. HEALTH SERVICES: SOME NON-GOVERNMENTAL INITIATIVES

3.1 Observations & Remarks

Based on the observations on innovations presented in Tabular form in Section 3.2 of this Chapter, the following conclusions can be drawn.

1. **Paravets:** One real fact that emerges from all the above experiences is that “**trained unemployed educated youth can effectively take basic veterinary health care to the farmers’ doorstep, thus expanding the livestock health services to a wider area. Such youth can also be effective lay artificial inseminators and ground level livestock extension worker.**”
 - a) For the paravets to be effective the training and supervision of the paravets has to be standardized. This is especially important as the Indian Veterinary Council recognizes only government trained paravets and insists that only such paravets can practice. It is good to have a standard IVC recognized syllabus and system of training, which can be allotted to even recognised NGOs, KVKs and other HRD oriented organizations. Some observations on the paravets are as follows. Every district of AP has many such institutions.
 - i. Paravet training is not uniform at all locations and the paravet training provided by non-governmental organisations is not recognised by the Indian Veterinary Council.
 - ii. There are vast differences in performance of paravets as all non-government organisations using paravets do not have similar standard of training, supervision, monitoring and follow-up of paravets.
 - iii. There are apprehensions that the paravets would overreach (many already do) their brief and go for clinical practice using powerful antibiotics and other drugs. This is not desirable.
 - iv. Use of indigenous medicines (Ayurveda) by paravets is not of the same status everywhere, but it is a very important traditional and economic system of treatment understood by the livestock farmers.

- b) There are apprehensions that the paravets would overreach (many already do) their brief and go for clinical practice using powerful antibiotics and other drugs. This is not desirable. The possible ways for countering this are –
- i) training of paravets to include dangers (legal, loss of credibility, antagonism of villagers) of unauthorized use of powerful drugs and education ‘dos’ and ‘don’ts’ of drug usage;
 - ii) giving emphasis on use of herbal and homeopathic medicines by paravets which are cheap and locally available;
 - iii) introducing a system of restricting stocking and use by paravets of some 10 basic general utility medicines (ointments, electuaries, tinctures, dewormers) for common ailments (diarrhoea, bloat, impaction, injuries, sprains, abscesses, fever, parasitism). A private company in Punjab had usefully employed this method with buffalo keepers supplying milk to them.
 - iv) refresher training of veterinarians on aspects of monitoring work of paravets as a tool of symbiotic relationship, as a further extension of the veterinary services under them.
- c) The village Panchayats have to be involved in supporting paravets and field veterinary care as a village welfare measure. There is constitutional and financial provision for this in the current Panchayat Raj system. Use of funds meant for purchase of medicines and also use of money from the Panchayat’s MOOLBHOOT (basic needs) fund has to be sought for livestock development.
2. **Animal Health Camps**, for the reason that there are ready sponsors for them, are another avenue that can be used for extending animal health care services. Though they are periodic in nature, by proper planning they can be regularly organized rotation wise in a given area and the sponsors requested to continue supporting in the new format. Some observations on the animal health camps are as follows.
- i. They are periodic in nature.
 - ii. They are not yet well integrated into the overall livestock health delivery system.
 - iii. Not always good attention is paid to the ‘home-work’ with regards to the organisation of the camps resulting in glitches at the time of running them.
 - iv. In general there seems to be a perpetual shortage of essential medicines (due to shortage of funds) at such camps.
 - v. Follow-up after the camps is not always evident.
3. A study conducted by the Centre for Public Perception and Policy, Hyderabad covering the 4 projects (Andhra Pradesh Participatory Tribal Development Projects, Andhra Pradesh community Forest Management Project, Watershed Development Program, Andhra Pradesh Rural Reconstruction Program i.e. Velugu) indicated that not much benefit is derived from Animal Health Camps organized in the present haphazard manner. Possible solutions to rectify this could be -
- a) The sponsors have to adopt planned camps rather than organizing camps because the sponsor wants.
 - b) The camps should be integrated into the overall system of field veterinary services; as a referral exercise, for follow-up of health care measures, as an opportunity of disease investigation and diagnosis etc.

There is need for finding a way for making some funds available for purchase and stocking of medicines for use in health camps, as the camps generally suffer from shortage of medicines.

Presented below in Tabular form (Section 3.3) are the observations on innovations in extending animal health services to the doorstep of the farmers.

3.2 Innovations in Animal Health Care

1	Legal nature of service/ organization	Area/ population coverage/ Quantity	Service structure and mechanism delivery	Focus area/ type of customers	Service contents/ What is on offer	Level of innovation
Anthra in AP <i>Innovation: Local skill based livestock services & resource management by women</i>	NGO (registered); in operation for more than a decade	300 trained Animal Health Workers in such areas of 11 districts of AP, where govt. services are not adequate	Volunteer <u>women</u> selected by community, trained (modular) in PRA, PRA done to know problems and plan action, training in basic vet care, delivery of services in village itself, liaison with AHD vets and village traditional healers, use of Homeopathy & Ayurveda also;	People of weaker sections and in tribal areas in the main with focus on women	Provision, right in the village, of preventive & curative (first aid) services to live-stock & poultry, carry out preventive education programme, locally making and use of herbal medicines, mobilizing vaccination & deworming with the help of AHD, monitoring via keeping registers, regular mortality-morbidity surveys & PRAs for judging status and deciding future course of action	Good in the areas of operation with good impact (as per surveys) – preventive care improved survival of livestock & poultry resulting in increased live assets and income & reduced losses due to morbidity & mortality, spurt in preventive health management;
NOTE: 1. Anthra's Training Programme is innovative and includes – a) linking animal health care to poverty, household socio-economy, gender issues, family health, environment, bio-diversity, use of PRA for decision making, livestock husbandry & feeding; 2. Anthra's Preventive Health Education is innovative and includes methods like use of PRA, focus group discussions, farmer workshops, theatre, puppet shows, songs, Jatras (campaigns), Bazaars (local weekly markets). 3. Cost Benefit Ratio of the programme = 1:7 for one year, for a village community attended to by one AHW (Rs. 76,500 additional returns from animals & poultry; Rs. 10,500 on training; annual retraining costs would be Rs. 3,000 in subsequent years). 4. Focus on small ruminant keepers with Common Resources Management as an important aspect of work.						
2	Legal nature of service/ organization	Area/ population coverage/ Quantity	Service structure and mechanism delivery	Focus area/ type of customers	Service contents/ What is on offer	Level of innovation
Grama Abhyudaya Samithi in Nizamabad <i>Innovation: Poor sheep farmers empowered</i>	NGO (registered); in operation for more than a decade	Majority or of the weaker sections, operation through about 40 trained paravets located at appropriate centers and centers grouped into clusters in 18 Mandal wise (nearly half) of the district;	Trained their own workers as well as nominees from other beneficiary schemes and banks as paravets; gave kits and placed in villages for doorstep service;	Focus on weaker sections – sheep breeders	Provide first aid, vaccination, deworming, AH extension; collaboration with AHD in health camps, monitoring care of dairy animals and sheep distributed under various schemes,	Good impact, sheep and goat keepers are said to be utilizing the services well;
NOTE: The organization has followed up the work of the said trained paravets for 4 years and, having satisfied with their performance, left the paravets to function independently some 3 years back. But still these paravets come to the organization for back-stopping and advise. They also are acting as referrals to the nearest government veterinarian.						

3	Legal nature of service/ organization	Area/ population coverage/ Quantity	Service structure and mechanism delivery	Focus area/ type of customers	Service contents/ What is on offer	Level of innovation
Youth for Action in Mehabo-obnagar district	NGO (registered); in operation for more than a decade	Weaker sections, mostly Shepard households in the district,	Trained youth from villages as paravets; gave kits and placed in villages for doorstep service;	Weaker sections – Shepard families	Provide first aid, vaccination, deworming, AH extension; collaboration with AHD in health camps etc.	Good, usage of services by sheep farmers has increased greatly – maximum daily cases to paravets are sheep
NOTE: 1. This organization also runs an Agriculture Extension Centre (<i>Krishi Vignyan Kendra</i>) under ICAR scheme. 2. The organization introduced mechanical spinners (<i>charkha</i>) to relieve women from the tedium of spinning woolen yarn with bare hands and also tried to bring in professional shearers for custom shearing of sheep as this is a wool producing district. <i>Innovation: Poor sheep farmers empowered</i>						
4	Legal nature of service/ organization	Area/ population coverage/ Quantity	Service structure and mechanism delivery	Focus area/ type of customers	Service contents/ What is on offer	Level of innovation
Rashtriya Seva Samithi in Chittoor district <i>Innovation: Poor women farmers empowered</i>	NGO (registered); in operation for more than a decade	Two Mandals in Chittoor district, 12 villages	Encouraging women's SHGs to form into village women's dairy coops, training chosen members of the coop as Village Veterinary Guide @ 3 per village where one works as paravet and the other 2 as extension workers	Women, especially of weaker sections	1 Woman Village Vet Guide -Basic veterinary care (first aid) vaccinations, deworming, liaison with veterinarian; 2 Woman Village Vet Guides – extension workers, animal health care education, fodder production, milk testing, recording, linkage with financial institutions etc.	Good, especially because forming women's dairy coops had to face strong (some times violent) resentment from middlemen; Annual performance targets for all parameters fulfilled and exceeded
NOTE: This work was undertaken as STEP initiative (Support for Training and Employment Programmes) of the Department of Women and Child Welfare of the Government of India.						
5	Legal nature of service/ organization	Area/ population coverage/ Quantity	Service structure and mechanism delivery	Focus area/ type of customers	Service contents/ What is on offer	Level of innovation
Andhra Pradesh Rural Livelihoods Programme	Joint venture of Govt. of AP and DFID of UK Govt.; in operation for a few years	In Watershed Programmes in 5 dry districts of AP	Trained paravets at village level, also using the services of Gopala Mitra	Small farmers	Providing vet. first aid, guiding villagers in better stock husbandry, coordination of other available services from AHD, coordination with Gopala Mitra for AI	Still not clear

6	Legal nature of service/ organization	Area/ population coverage/ Quantity	Service structure and mechanism delivery	Focus area/ type of customers	Service contents/ What is on offer	Level of innovation
Agri-clinics & Agri-Business Centres (in operation for 2 years) Innovation: <i>Privatisation via unemployed graduates</i>	Unemployed Veterinary graduates (fresh or retired) alone or as a group of five	As chosen by the candidate	1. Candidate(s) Undergoes three month training in rural oriented business management, ↓	All, on commercial basis	Full scale veterinary health cover, vaccina-tions, dewormings sale / supply of medicines, feed manufacture and distribution, breeding – natural, AI, ET, vaccine cold chain, fodder seed supply and advice, livestock extension, establishment of poultry & livestock farms, procurement & marketing of products etc	High, but yet to establish
		2. Candidate prepares & submits business project proposal to bank, 3. After obtaining bank loan establishes business as a service provider to take care of all the villages in the chosen area. 4. One person (if activity is limited) or five as a group (if many activities are to be taken up). The mix of activates are the candidate(s) choice.				
NOTE: 1. This country wide scheme is sponsored by the Ministry of Agriculture, Government of India + Small Farmers' Agriculture Coop + MANAGE + NABARD; 2. MANAGE selects candidates and trains them in state wise recognized training institutes; 3. During training potential of chosen activity (ies) undertaken & Project for financing submitted to banks. 4. Loan up to Rs. 1 million per candidate or up to Rs. 5 millions for a group of 5 (one of whom must be an MBA) on payment of 10% margin money; 5. After obtaining necessary licenses/permissions the candidate(s) start(s) business. 6. Many across India took up livestock based services across India including some in AP. 6. Has a good scope for extending livestock service in future.						
7	Legal nature of service/ organization	Area/ population coverage/ Quantity	Service structure and mechanism delivery	Focus area/ type of customers	Service contents/ What is on offer	Level of innovation
Animal Health Camps Innovation: <i>Taking highly skilled services to villages, though periodically</i>	Organised under various initiatives– DAH, NGOs, Janmabhoomi movement of Govt of AP, charitable or religious trusts, other formal & non-formal institutions, rural dev. Projects;	These are occational events meant for a village or a group of villages	Specialists from AHD with the help of local departmental staff and paravets; organization by the sponsors; medicines some times donated and some times provided by ADH but always insufficient;	All farmers, weaker section people get opportunity to benefit from the services	Clinical treatment, vaccination, deworming, gynecological problems, advise etc.	Varying, but generally most farmers utilize the camps. Especially those from weaker sections (small ruminant farmers);
NOTE: There is scope for regularising and standardization of these camps as many non-governmental organizations and development projects are coming forward. There is need for funds for medicines and follow-up action. Extreme care is needed to see that tribals and weaker sections do benefit from such camps.						

8	Legal nature of service/ organization	Area/ population coverage/ Quantity	Service structure and mechanism delivery	Focus area/ type of customers	Service contents/ What is on offer	Level of innovation
District Sheep Breeders' Union in 3 districts <i>Innovation: Poor sheep farmers empowered</i>	Registered formal cooperative under the Cooperative Registration Act of 1964 – 2 Unions, one registered under the Mutually Aided Cooperative Act 1995	Pilot project – NLG: Rearers: 950 SR population: 40000 MBNR: Rearers: 400, SR Population: 45000, ATP: Rearers: 260, SR Population: 20000, Coverage 2% as the emphasis of the project is not on treatment	1.VVWs belong to a rearers' family, 2. VVWs reside in the same village with links to 2-3 villages of minimum 5000 SR population, 3. VVWs visit flock in his villages once in 2 days.	Sheep farmers (weaker sections)	1.Training of Voluntary veterinary workers (VVWs), 2. Medical kit provided, 3. Minor ailments of small ruminants attended to as RLUs not easily accessible; 4. Use of traditional herbal medicines to be introduced soon;	Good - as govt. vets are not easily available to the rearer when he needs. VVWs familiar with the rearers and also has social links, which could be utilised also for creating better awareness among the rearers.
- do- <i>Innovation: Improved, systematized service base for poor sheep farmers</i>	- do-	In two years coverage is about 80% in pilot villages	1.VVWs in colla-boration with the AHD vets., 2. As per schedule need assessed, 3. Indent Made, 4. Medicines purchased as per rate contract. 5.Rearers pay cost of medicine as worked out, service charges, as well as admin, charges to the primary societies (village level) and the District Union. Example ET vaccine cost is Rs. 0.70p per dose; rearers pay Rs. 1.50 per dose. 6.Amount collec-ted used to build up corpus fund for the Union and primary society.	- do-	1.Schedule for vaccina-tions and deworming prepared, 2. One week prior to programme rearers' meetings and awareness programme held, 3. Discussions with Primary society directors held, 4. Planning for programme with AHD vets conducted.	Very Good – as regularity of the programme is maintained. Rearers are provided with extension material in various forms – calendars, charts, and handbills.

NOTE: 1. From the three districts of Nalgonda, Mahabubnagar & Ananthapur in collaboration with the Indo Swiss NRM Programme in Andhra Pradesh. 2. This input provided by Ms. Rebecca Katticaren, POA-Hyderabad is gratefully acknowledged.

9	Legal nature of service/ organization	Area/ population coverage/ Quantity	Service structure and mechanism delivery	Focus area/ type of customers	Service contents/ What is on offer	Level of innovation
<i>Gopala Mitra</i> (Friend of the cow keeper) Innovation: <i>Govt. sponsored, systematized rural service</i>	Private self-employed individuals	30-40% of the breedable bovines in group of villages falling within his Centre of operations	1. Obtaining Training, equipment & semen (on cost) from APLDA; 2. Mobility by his own mo-bike / moped / bicycle. 3. Service at the doorstep of the farmer against cash payment	1. In areas where government AI facility is not available 2. All farmers in such an area. 3. Dairy Coops using their services	1. Some taking up treatment though their main job is AI 2. Coordination of Vaccinations & deworming with AHD 3. Vet. First Aid	Fairly widespread and accepted in the areas of their operation
10	Legal nature of service/ organization	Area/population coverage/ Quantity	Service structure and mechanism delivery	Focus area/ type of customers	Service contents/ What is on offer	Level of innovation (<i>The INNOVATION?</i>)
PAS Ramakuppam (Chittoor Dt) & MEM Damalcheruvu (Chittoor Dt)	NGO Registered Society	Ramakuppam Mandal (part of district) 70% animals 30% households Damalcheruvu Mandal; @ 100 families per trained paravet	NGO workers (not trained as paravets) organize services of Traditional healers and Govt. Vets; organize health camps & AI with the help of Govt. vets Trained paravets cover allotted villages to provide basic health services & AI with Govt. help	Farmers- of Weaker sections; Species – sheep 41%, poultry 47%, cattle 12% of cases All farmers, all species	Treatment, Vaccinations, deworming, promotion of use of indigenous medicines, training in preparation of traditional medicines) organisation of health camps Treatment, Vaccinations, deworming, promotion of use of indigenous medicines, training in preparation of traditional medicines) organisation of health camps	4 over 3 of Govt. services as the latter is difficult to get (<i>Use of traditional medicines & traditional healers in vet practice</i>) 4 over 3 of Govt. services as the latter is difficult to get (<i>Use of traditional medicines & traditional healers in vet practice</i>)
11 NGOs listed below (Inputs by courtesy of Mr. Vinod of NRMPA, Hyderabad)	NGO Registered Society	Cover about 10% villages for basic treatment and about 25% of villages for vaccinations and health camps in the Mandal (part of district)	NGO workers (not trained as paravets) organize services seasonally / periodically with the help of Govt. vets	All farmers, all species	Basic health care (treatment), vaccinations, AI, animal health camps	Helping spread reach of Govt. services; (<i>'force-multiplication' effect via intervention of NGOs</i>)
In Khammam District: 1. AGD, Kunavaram Mandal, 2. ASDS, V.R.Puram Mandal, 3. Krithi, Bhadrachalam Mandal, 4. (Mr. Gurumurthy), Mulakapalley Mandal, 5. Jagruthi, Yellandu Mandal, 6. ASHAS, Chinturu Mandal; 7. WASSAN in Nalgonda & Ranga Reddy districts ; 8. ASSMA, Kunorpaka Mandal, Medak district ; 9. Mulugu Mandal, Medak district .						

4. BREEDING SERVICES

The breeding services for cattle and buffaloes, as well as that for small animals, are almost exclusively in the hands of the Government - 1. State Animal Husbandry Department (AHD), 2. State Agricultural University (AU), 3. Andhra Pradesh Livestock Development Agency (APLDA) & Visakha Livestock Development Agency (VLDA), 4. Andhra Pradesh Cooperative Dairy Federation (APCDF) with the District Cooperative Dairies (DCD). The 3rd and the 4th organizations are registered under the Societies Registration Act as modified in Andhra Pradesh, i.e. the Andhra Pradesh Mutually Aided Cooperative Societies Act of 1995. This unique AP Coop Act of 1995 gives full freedom of policy formulation and finance management to the general body of the societies.

The Indo Swiss Project AP, a collaborative programme between the AHD and the Swiss Development Agency, has been a major contributor to the two-decade old efforts that have gone into the development of the infrastructure, HRD, restructuring breeding operations, MIS etc of the present day breeding services.

4.1 Breeding Policy

There is a well laid out breeding policy for Andhra Pradesh developed by a committee comprising of representatives of the State Animal Husbandry and Agricultural University and experienced senior animal husbandry specialists. It comprises of definite policy statement along with a region wise operational plan and a plan for developing lines for production of desired breeding bulls within the state. The present breeding policy for bovines in Andhra Pradesh was first formulated by the AHD in 1979/80 basing on the existence of three main types of bovines, i.e. non-descript buffaloes, non-descript cattle and recognised indigenous cattle breeds such as Ongole and Deoni. Salient features of the same are as follows (Annual Report of AHD + Indo Swiss Project AP of 1994/95).

The statewide uniform policy for buffaloes is upgrading with pure Murrah except for dry and drought prone areas with limited fodder resources, where graded Murrah is advocated as the sire breed. As regards cattle, the breeding policy can be summarised below.

- 4.1.1 Objective:**
1. Nondescript cattle - Improving milk yield
 2. Indigenous Cattle breeds - Improving milk yield and draught power
 3. Buffaloes - Improving milk yield
- 4.1.2 Approach:**
1. Nondescript cattle - Cross breeding and selection
 2. Crossbred cattle - *Inter-se* mating and selection
 3. Indigenous Cattle breeds - Pure breeding and selection (Ongole, Deoni)
 4. Buffaloes – Grading with Murrah breed
- 4.1.3 Criteria:**
1. A 50% exotic blood shall be maintained
 2. Allotment of sire breeds to be based on seven Agro climatic zones a Jersey line
 3. Development of H. Friesian / Jersey lines
 4. Development of Ongole and Deoni line
 5. Development of Murrah line

4.1.4 Coverage: The ultimate aim is to cover the entire breedable population of the state by AI. Since the same is not possible at this stage a practical way for coverage developed is as follows. The natural service being the option for local nondescript cattle, especially in remote areas.

1. Area where breedable population to be covered by AI

2. Area where breedable population to be covered by controlled natural service with selected bulls, i.e. ONS or Organised Natural Service
3. Area where breedable population to be covered uncontrolled natural service with bulls of private farmers, i.e. UNS or unorganized natural service

4.1.5 Breeding Lines: The breeding policy described in above requires the availability of different sire breeds for the AI or natural service programmes under the following 4 main genotype 'lines'.

1. **Jersey line** with pure Jersey bulls and Jersey crossbred bulls
2. **Holstein Frisian line** with pure HF bulls and HF crossbred bulls
3. **Indian breed line** with **Ongole** and **Deoni** bulls
4. **Murrah** line with pure Murrah bulls and graded Murrah bulls.

The involved Indian breed in the crossbreeding programmes is Tharparkar, a versatile indigenous dairy breed from north-west region, with reasonably good draught capacity. Mating plans, or breeding schemes were also developed for production of the breeding lines mentioned above and are being implemented in different AHD and AU Farms shown in the map given at Annexure 2. Attention has been paid to purchase, where necessary, of bulls or semen, and production of the requisite number of different types of breeding bulls. Production parameters for different genotypes were standardized for data collection, procession and evaluation.

While it is difficult to give details of all such plans in a Report of this nature, some salient development-over-time features of such schemes are given below to indicate the dynamic flexible nature of the system.

1. The mating systems vary in their relative importance from region to regions.
2. The mating systems change in their extent of coverage over time, in that AI would gain importance at the expense of natural service breeding systems.
3. The relevance of each breeding scheme and the semen type (in case of crossbred and exotic bulls used) varies between zones and regions as dictated by the prevailing management levels and production systems.
4. Over the years the demand for exotic bull semen would decrease and that of crossbred bulls would increase.

4.1.6 Regional differences: In 1990 an element of regional stratification was added to organization of the operational cattle and buffalo breeding policy taking into consideration the regional differences in agro-climatic conditions, farming systems, availability of green fodder, crop residues, temperature and rainfall and resulting differences in farmers' preferences for specific animal types, five regions were identified (See the map in Annexure 1). Keeping in view of these factors an expert committee has made the following recommendation and identified five different breed types as sire breeds to be used in AI and organised natural service in the said five regions.

CATTLE

- **Coastal Andhra (North)**
 - Jersey bulls mated to non-descript cows
 - Jersey crossbred bulls (50% exotic) mated to Jersey crossbred cows
- **Coastal Andhra (Delta, South)**
 - HF bulls mated to non-descript and Ongole type cows in Delta area

- HF crossbred bulls (50% exotic) mated to HF crossbred cows
- Jersey bulls mated to indigenous cows in upland areas
- Jersey crossbred bulls mated to Jersey crossbred cows
- Ongole bulls mated to Ongole type cows in Ongole tract
- **Rayalseema**
 - Jersey bulls mated to indigenous cows
 - Jersey crossbred bulls (50%) mated to Jersey crossbred cows
 - Ongole bulls mated to Ongole type cows in parts of Kurnool and Cuddapah districts
- **Telangana (except Medak district)**
 - Jersey bulls mated to indigenous cows
 - Jersey crossbred bulls (50% exotic) mated to Jersey crossbred cows
 - HF bulls mated to cows in Hyderabad city and surroundings
 - HF crossbred bulls (50% exotic) mated to HF crossbred cows
- **Medak District**
 - HF bulls mated to non-descript cows
 - HF crossbred bulls (50% exotic) mated to HF crossbred cows
 - Deoni bulls mated to Deoni type cows in Zaheerabad and Narayankhed taluks
- **Tribal Areas**
 - Jersey crossbred bulls (50% exotic) for natural service
 - Deoni bulls for pure breeding in selected areas
- **Areas with better management levels**
 - Jersey crossbred bulls (75% exotic) mated to Jersey crossbred cows (50%)
 - HF crossbred bulls (75% exotic) mated to HF crossbred cows (50%)

BUFFALOES - STATEWIDE

- Purebred Murrah bulls mated continuously to non-descript and graded she-buffaloes (upgrading)
- Graded Murrah bulls mated to non-descript and graded she-buffaloes in dry and drought prone areas with limited fodder resources

4.2 Breeding Infrastructure

4.2.1 Institutions: The State has a sound animal breeding infrastructure in the form of germ plasm units, breeding farms for different species, bull mother farms, frozen semen stations, frozen semen depots, andrology laboratory, training centers etc. The general location of such institutions is shown in the Map given at Annexure 2. It may be noted that most of the farms are and all the semen production, processing and distribution institutions are under the AHD or APLDA / VLDA. The state AU has also got some livestock research stations, the most important of which are the Livestock Research Station at Lam Farm (Guntur district) for Ongole cattle and the Murrah Buffalo Research Station at Venkataramannagudem (West Godavari district). A more detailed description of the same will be given in Section Chapter 5.

APLDA-VLDA: Formed under the Central Ministry for Animal Husbandry & Dairying's National Project for Cattle & Buffalo Breeding, the APLDA – VLDA, headed by very senior Chief Executive Officer(s), are the organisations (s) owning and manning all the cattle and buffalo breeding institutions in the State as shown in Annexure 2. VLDA is the first and the pilot organization started at Visakhapatnam to cater to the needs of the north coastal districts. It is still functioning as a separate entity but within the overall scheme of things in the state. The APLDA

covers the remaining districts of the state. After a review of their functioning after 5 years (in 2005), they are to be restructured for even more effective functioning.

Bull/semen production / procurement, distribution, augmenting extent and quality control and usage of semen by monitoring and supervision are all its concern. The main objectives of this 3-year old organization are as follows.

1. Restructuring of breeding operations by involving farmers' organisations.
2. Provision of sustained quality inputs – semen and bulls, as well as AI service.
3. Providing the AI inputs to private trained practitioners known as GOPALA MITRA to take up doorstep AI on self-employment basis.
4. Provision of the service on user payment basis.
5. Coverage by AI of all the nearly 10 million bovines of the state belonging to nearly 3 million farmers in nearly 30,000 villages to increase milk production beyond 12 million tones (more than doubling) within 10 years.

The various functions pertaining to breeding services entrusted to the care of APLDA-VLDA are as follows.

1. Production and procurement of quality inputs like Frozen Semen, Liquid Nitrogen and Artificial Insemination equipment, and their proper supply on cost effective basis.
2. Crossbreeding and up gradation of cattle and buffalo by strengthening and expansion of field Artificial Insemination network.
3. Promotion of Area Livestock Development Associations.
4. Maintenance and Development of Indigenous Germplasm in the breeding tracts of the state.
5. Standardizing Methodology of Artificial Insemination for designing training programme.
6. Generation of self-employment for educated unemployed rural youth as private Artificial Insemination practitioners (Gopala Mithras)
7. Maintenance of quality Artificial Insemination services through effective monitoring, supervision and quality control.
8. Assessing the breeding needs, training and positioning the Artificial Insemination technicians.
9. Management of Information System, collection of basic data, development of suitable database, periodical review and study the impact of the project, carrying out Research and Development, educating the farmers on breeding activities and reproductive management.

4.2.2 Infrastructure Augmentation: Most of the breeding infrastructure (breeding farms, semen stations, manpower) that was previously under the AHD was brought under APLDA-VLDA after the latter's formation.

1. Delivery network: Before formation of APLDA, 3809 departmental centers were provided with Artificial Insemination facility out of 5004 Veterinary institutions in the state. After the formation of APLDA, 2227 departmental stationary Artificial Insemination centers have been provided with mobile facility. Artificial Insemination facility has been introduced in 644 non-AI centers. Nearly 670 Gopala Mitra Centers have been established in places where there are no departmental centres to carry out doorstep AI Service.

2. Liquid Nitrogen Plants & Supply: There are 9 Liquid Nitrogen Plants functioning at Vizag, Rajanagaram, Tadepalligudem, Gannavaram, Kovur, Nandyal, Nizamabad, Warangal and Karimnagar with installed capacity of 6 to 8 litres per hour. Three Liquid Nitrogen Tankers are being operated now, one from Visakhapatnam supplying to nine coastal districts and another two from Hyderabad catering to Telangana and Rayalaseema districts.

3. Frozen Semen Bull Stations: Four Frozen Semen Bull Stations at Vizag, Nandyal, Banavasi and Karimnagar are functioning with 240 breeding bulls producing 2.4 million doses of semen annually. Frozen Semen is being distributed to all the institutions through 21 District Frozen Semen Depots situated in all the districts except in Adilabad.

4. Farms and Progeny testing: Three Livestock farms are functioning at Vizag, Banavasi and Karimnagar for production of breeding bulls. Progeny testing in crossbred cows is in operation in Chittoor district and for Buffaloes in West Godavari and Krishna districts. With this available Breeding infrastructure and network, 2.72 million Artificial insemination were done with conception rate of 38.5%, producing 0.76 million quality calves during the year 2000-2001. A Government of India assisted small scale field progeny testing scheme is functioning at Chittoor since 1987 for selection of crossbred bulls.

5. Expansion of AI Network with Frozen Semen: The Plan is to increase the bull strength in Frozen Semen Production Bull Stations from the present 240 to 600 bulls and add 2 more Frozen Semen production Bull Stations so as to produce 9 million doses of Frozen Semen annually, required for expanding AI network to 100% breedable population. Existing Frozen Semen Bull Stations will be strengthened with by technology up-gradation. During the three years under operation mobility was provided to 3585 previously stationary AI Centres, 1195 previously non-AI AHD institutions were made mobile, and 3027 Gopala Mitras centres were established. This has helped in taking AI to newer areas, to remoter areas and to the farmers' doorstep. Plans are a-foot to produce/procure more bulls, some from abroad, to meet the expanding demand for quality semen and for placement in remote hilly areas for natural service.

4.2.3 Human Resource Development:

1. Gopala Mitras: High school completing unemployed village youth is trained for 4 months as *Gopala Mitras* (friends of the cattle keeper) in reproduction, AI, common diseases, vaccination, first aid, fodder production, feeding and management of animals. After training, they are placed at a Gopala Mitra Centre (usually near his own village) with a demarcated area of operation in a group of villages. They are provided with the kit of AI and other equipment worth Rs. 25 – 30,000. Their main job is to provide AI at the farmer's doorstep collecting the user charges (Rs. 40) out of which about Rs. 30 is the material cost. Most of them do some vaccination and provide first aid. Some of them are resorting to clinical practice proper, which is viewed with concern. Nearly 3,000 youth are so trained so far and 1,000 more have to be trained. Many of the trained persons established themselves as Gopala Mitras with varying success. Some have not taken up the assignment, however, and went for other jobs.

2. Staff Training: It is proposed to impart training to 2000 in-service candidates in Frozen Semen technology every year and to send five candidates to abroad for advanced training in breeding technology. To acquaint the personnel with latest developments in the field of breeding and Frozen Semen technology bi-annual workshops and seminars are proposed to be organised involving subject matter specialists.

4.2.4 Farmer's Participation, Training & Extension: An important feature of APLDA-VLDA is the organisation of Area Livestock Development Associations (ALDA) at the district level, a society of cattle farmers with elected office bearers. President and members of ALDA assist in selection of suitable candidates as Gopala Mitras, keep track of their functioning and have a say in the breeding service as a whole. With ALDA's active participation, it is proposed to organise farmers' training programmes, drawing at least 10,000 farmers from each district. They will be trained in a phased manner on reproductive management of cattle and buffaloes. The Extension Programmes envisages to educate 3 million farmers who possess the breedable population, on all the aspects of reproductive

management, through all possible effective media like video cassettes, films, printed material, exhibition and shows and through mass media like radio and television.

4.2.5 Monitoring & Evaluation: The CEO of the LDAs is the officials ultimately responsible for effective operations. A Deputy and small monitoring group assist them in this task. At the district level, an Assistant Director, assisted by a Veterinarian(s) is in charge of training the Gopala Mitras. After placement of the Gopala Mitras, this official doubles up as their advisor and also monitors their performance. Otherwise nearest veterinary doctor supervises their work. Retired senior stockmen (Junior Veterinary Officers) are appointed on contract basis at the rate of one for 3-4 Gopala Mitra Centres (a centre covering a group of villages) by actually carrying out pregnancy diagnosis of cows inseminated by the latter. They report to the concerned Assistant Director. The ALDA people also keep a track of the regularity of service provision and attitude of Gopala Mitras.

4.2.6 Progeny Testing Programme: The progeny testing unit for selection of Murrah Bulls under farm conditions is functioning at Banavasi since 1972. Government of India assisted one small-scale field progeny testing scheme is functioning at Chittoor since 1987 for selection of crossbred bulls. Another progeny testing scheme is functioning under the State plan for the districts of West Godavari and Krishna for selection of Murrah bulls. A remarkable achievement towards this direction is that, about 8 batches have been completed milk recordings in buffaloes and 3 batches in crossbreds. Out of these, 3 batches in buffaloes and one batch in crossbreed have been evaluated for the sire performance. These bulls are distributed to Livestock farms for production of superior bulls.

4.3 Sheep & Goat Breeding:

The State has the second largest sheep population in the country playing an important role in the economy of the State. Sheep rearing is in the hands of economically weaker sections of the society. The most widely distributed indigenous sheep breed of the state is the famous mutton breed Nellore, with its three variants – Nellore Brown, Jodepi and Palla. Deccani, the dual-purpose breed is found in Mahaboobnagar and areas along the adjoining Maharashtra breed and Bellary is found in Anantapur and adjoining of Karnataka. Besides, the non-descript type sheep are in the majority. Osmanabad is the only indigenous goat breed found in areas around the capital city of the state.

4.3.1 Organised Breeding: Since the formation of the state, several Sheep development programmes have been taken up aimed at genetic improvement of the stock for higher mutton and wool production and effective health cover and extension. Sheep farms at Mamidipally. Penukonda, Siddarampuram, composite Livestock Farms at Chintaldevi and Mamnoor farms are being utilised for various breeding operations. Exotic Corridale rams were used for crossbreeding and Nellore rams for upgrading non-descript sheep population. Russian Merino and Rambullet breeds were introduced on an experimental basis for crossbreeding at Mamidipally and Ananthapur farms. Dorset Horn was introduced for production and supply of Dorset Horn Nellore F₁ rams to the shepherds for improving mutton production. Ram multiplication farms at Penumoor (Chittoor) and Akepadu (Cuddapah) were established for supply of pedigreed rams to the shepherds. Five Intensive Sheep Development Blocks (ISDBs) were established during 1986-87 to further accelerate sheep development with special emphasis on breeding and 5 more ISDBs were added subsequently.

4.3.2 Observations – Sheep Breeding: Most of the crossbreeding programmes do not seem to be sustained, are inconclusive and left only a marginal impact on improvement in the production output of the sheep of the state. The most ambitious of them all, the Mamidipally near Hyderabad large-scale integrated sheep farm established under the central grants is almost non functional. While, distribution of quality breeding animals to the farmers has their appreciation, many other

problems like diminishing Common Property Resources for grazing and health problems seem to be the greater constraints. Social and marketing problems also seem to determine farmers' desire for a particular breed. In Mehaboobnagar, perhaps the only really wool producing and processing district of AP, the tedium felt by the present generation women in woolen yarn making and great difficulties encountered in shearing seem to have made the farmers switching from the carpet wool yielding Deccani breed to the mutton type Nellore breed.

4.4 Poultry breeding:

Poultry breeding goes on almost exclusively in the private sector in Andhra Pradesh in collaboration with national and international layer and commercial breeders. The whole market is captured from them.

The AU is involved in development of some strains for field use. A high yielding White Leghorn layer bird ILR-90 Jubilee was released for field exploitation. Nearly 100,000 chicks were produced and supplied to farmers. There is a great demand for supply of the chicks in view of their feed efficiency and livability and reasonably high level of production. Efforts made by the University led to taking up by the farmers of rearing Japanese quails for meat production in the state. Crossbred ducks developed for the first time with higher production and livability become popular with coastal duck farmers.

4.5 Innovations in Breeding Services:

4.5.1 Observations & Remarks: Based on the observation presented in Tabular form in Section 4.5.2 below the following conclusions may be drawn.

1. The institution of Gopala Mitras is relatively new. There have been shortcomings in their performance, especially low levels of conception rate with AI by individuals (mostly due to breeding at the wrong time of the oestrus period) and irregularity of service by individuals, area-to-area differences in performances. Most of them were having only negligible earnings. Such teething troubles were identified and addressed to by closer supervision, follow-up by the trainer, education about heat detection – appropriate time of insemination etc. Such steps have brought improvement in their performance, in deed.
2. Those still in the business may earn from Rs. 1,000 to Rs. 3,000 as per their own version and also confirmed by a few office bearers of ALDAs. To augment their income and to make the occupation more attractive, APLDA initiated steps to give two milch animals to each Gopala Mitra through bank loans.
3. Workshops of Gopala Mitras and concerned officials conducted this year, first at the regional level and then at State level to review the sustainability of Gopala Mitras has taken cognizance of the above and came up with solutions to make Gopala Mitra a more widely accepted multifarious provider of livestock services. Some such recommendations are as follows.
 - a) Allow Gopala Mitra to undertake on a regular basis, apart from AI, first aid, vaccinations, deworming, extension, fodder development, input supplies in his/her area of operation.
 - b) Paying incentives to Gopala Mitra on achieving higher rates of conception with AI and higher rates of calf birth.
 - c) Reducing rate per insemination from Rs. 40 to Rs. 20 so that poorer farmers can also come forward, thus increasing the AI sought per Gopala Mitra, resulting in more income. This would, however, mean subsidization of the service, which may be appropriate in the initial years.

- d) Requesting every institutions/project/scheme/movement/activity/group involved in supply and use of livestock to adopt and sponsor the Gopala Mitra of their area by providing some honourarium to him/her. Such institutions are – Self Help Groups of Women (main activity – keeping dairy animals), DWACRA groups, cattle breeders’ associations, milk cooperative, agriculture marketing committees, farmers’ clubs, NGOs and groups involved development programmes like Joint Forest Management, Social Forestry, Watershed Management, Rural Development Project etc.
- e) Most importantly, the Village Panchayat, the local body, should sponsor the Gopala Mitra and also jealously use the funds meant for purchase of veterinary medicines and also sums from its Mool Bhoot (basic needs) Fund towards livestock care. This is their constitutional duty.
4. On the whole, the experience with Gopala Mitra can be considered as a reasonably successful venture in expanding the breeding services in Andhra Pradesh. It could do even better by strengthening the M & E system.
 5. Some NGOs (Anthra, Gram Abhyudaya Samithi and Youth for Action in Telengana and Sarada Valley Development Samithi Mahila Bank Members in north-coastal Andhra feel that crossbred cows are too difficult to feed and manage by the resource poor small farmers. Besides, this can affect the availability of draft power so essential for these regions. Interviews with some farmers’ representatives by these authors too substantiated this view. The government’s declared policy of crossbreeding non-descript cattle with exotic germ plasm in such regions has to be reassessed from this point of view.
 6. There is an indication that 50% crossbreds beyond F₁ generation, are not as good as F₁ animals in the field or even on government breeding farm (Example: Vizag). This aspect needs consideration.
 7. It is understood that, as per an agreement, APLDA pays a specified amount to BAIF and JK Trust (NGOs) for every calf born by AI conducted by them and another specified sum per offspring born by ET. Hence it is APLDA that seems to be sponsoring such activities.
 8. The most consistent fact that emerges from all the above experiences is that **“trained unemployed educated youth can effectively take AI to the farmers’ doorstep, thus expanding the breeding services to a wider area. Such youth can also be effective paravets.”**

4.5.2 Innovative Breeding Services

BREEDING SERVICES

	Legal nature of service/ organization	Area/ population coverage/ Quantity	Service structure and mechanism delivery	Focus area/ type of customers	Service contents What is on offer	Level of innovation
1 Gopala Mitra (Friend of the cow keeper) <i>Innovation:</i> <i>Systematised privatization of services</i>	Private self-employed individuals	100% breedable bovines in a group of villages falling within his Centre of operations	1. Obtaining Training, equipment & semen (on cost) from APLDA; 2. Mobility by his own mo-bike / moped / bicycle. 3. Service at the doorstep of the farmer against cash payment	1. In areas where government AI facility is not available 2. All farmers having breedable bovines in such an area. 3. The village Dairy Coops are gradually entrusting AI services to them.	1. AI mainly 2. Vacci-nations 3. Vet. First Aid 4. Some taking up treatment	Fairly widespread and accepted
2 BAIF Trained Insemi-nators <i>Innovation:</i> <i>Giving role to NGO?</i>	NGO (7 Mobile Centres in Anantapur Dt	100% of the households in the area allotted to them by AHD / APLDA	1. Obtaining Training, equipment & semen from BAIF; 2. Mobility by his own mo-bike / moped / bicycle. 3. Service at the doorstep of the farmer	1. In areas set apart for BAIF by APLDA. 2. All with focus on weaker sections	1. AI 2. Exten-sion 3. First aid 4. Vacci-nation, de-worming	Limited; Actural coverage by AI is said to be double of that by AHD / APLDA @ 2.34 AI per calf born

<p>3 J.K. Trust Gram Vikas Yojana Trained Inseminators "Gopal"</p> <p>Innovation: Giving role to NGO</p>	<p>Private Trust (150 centres in Chittoor & Anantapur Dt covering 1500 villages)</p>	<p>100% households in the area allotted to them by AHD / APLDA via Gopal Centres, each of which cover upto 2000 breedable bovines in a group of 10-12 villages</p>	<p>1. Obtaining Training, equipment & semen from JK Trust GVV; 2. Mobility by his own mobile / moped / bicycle. 3. Service at the doorstep of the farmer</p>	<p>1. In areas set apart for JK Trust GVV by AHD/APLDA. 2. All with focus on weaker sections</p>	<p>1. AI 2. Extension 3. First aid 4. Vaccination, deworming</p>	<p>Limited; @ 5.41 AI per calf born</p>
<p>4 J.K. Trust Gram Vikas Yojana "ET Tech."</p> <p>Innovation: Giving role to NGO in providing high tech. services</p>	<p>Private Trust (Same as above, but now mainly in Chittoor Dt)</p>	<p>Same as above</p>	<p>Trained staff of the Trust and the Gopals referred above</p>	<p>Same as above</p>	<p>1. Embryo Transfer Techn.</p>	<p>Still on a limited scale</p>

5. INDIGENOUS BREED DEVELOPMENT

5.1 Cattle

5.1.1 The Indigenous Breeds: The main indigenous cattle breeds of Andhra Pradesh and their distribution are as follows. Also please refer to Section 0.1.1 of this report at this stage.

Developing Indigenous Cattle Breeds of Andhra Pradesh

(Types: D = Draft & M = Milk; **Breeding Policy** = Improve milk yield and draught power (Indigenous Cattle))

NAME OF THE BREED	CORE HOME-TRACT (See Annexure 3)	BREEDING POLICY (See Annexure 1)	MAIN FARMS (See Annexure 2)
Ongole (D+M)	Prakasam, Guntur, Nellore, Kurnool	Pure breeding and selection	Mahanandi (Kurnool), Lam (Guntur), Chadalavada (Prakasam district), Ramatheertham (Nellore district),
Deoni (D+M)	Ranga Reddy, Medak, Nizamabad	Pure breeding and selection	Gudgarpalle, Z'bad (Medak)
Krishna Valley (Deccani?) (D+M)	Ranga Reddy, Adilabad, Medak, Nizamabad	Pure breeding and selection	Krishna Valley & Deoni are mainly from Maharashtra. but are also found in the border districts of AP
Malvi (D)	Karimnagar, Warangal, Khammam	Pure breeding and selection	Malvi is mainly found in MP / Chattisgarh, but are also found in the border districts of AP
Halikar (D)	Chittoor, Anantapur	Pure breeding and selection	Hallikar is mainly found in Karnataka but are also found in the border districts of AP
Punganur (D)	Chittoor	Conservation	Palamner (Chittoor)
Local (D)	All districts	Cross breeding and selection	---

5.1.2 Ongole Breed: Ongole breed is a 100% indigenous to Andhra Pradesh, the real pride of Andhrates. It is a fairly good milk producer (up to 1000 litres) and a highly valued draft animal well known for its strength and endurance. Its robustness, size, resistance to many tropical diseases (especially tick-borne ones), adaptation to hot climate, ability to thrive and produce at lower planes of nutrition and

consumption of coarse dry roughages, Ongole breed was the first choice of new beef breed developers in America, Australia and in many Latin American countries, notably Brazil.

From such a stage of grandeur, just a couple of decades ago, the number of real Ongole cattle in its own homeland has come down alarmingly low. A survey conducted by the Andhra Pradesh Livestock Development Agency (APLDA) in the year 2000-01 it was revealed that **only** about 15000 pure Ongole breedable cows are available in the state in the native tract. All this thanks to crossbreeding, fall in demand of draft for increasingly progressive agriculture with mechanization and perhaps a lack of interest in its development in the concerned parties.



ONGOLE BULL



ONGOLE COW

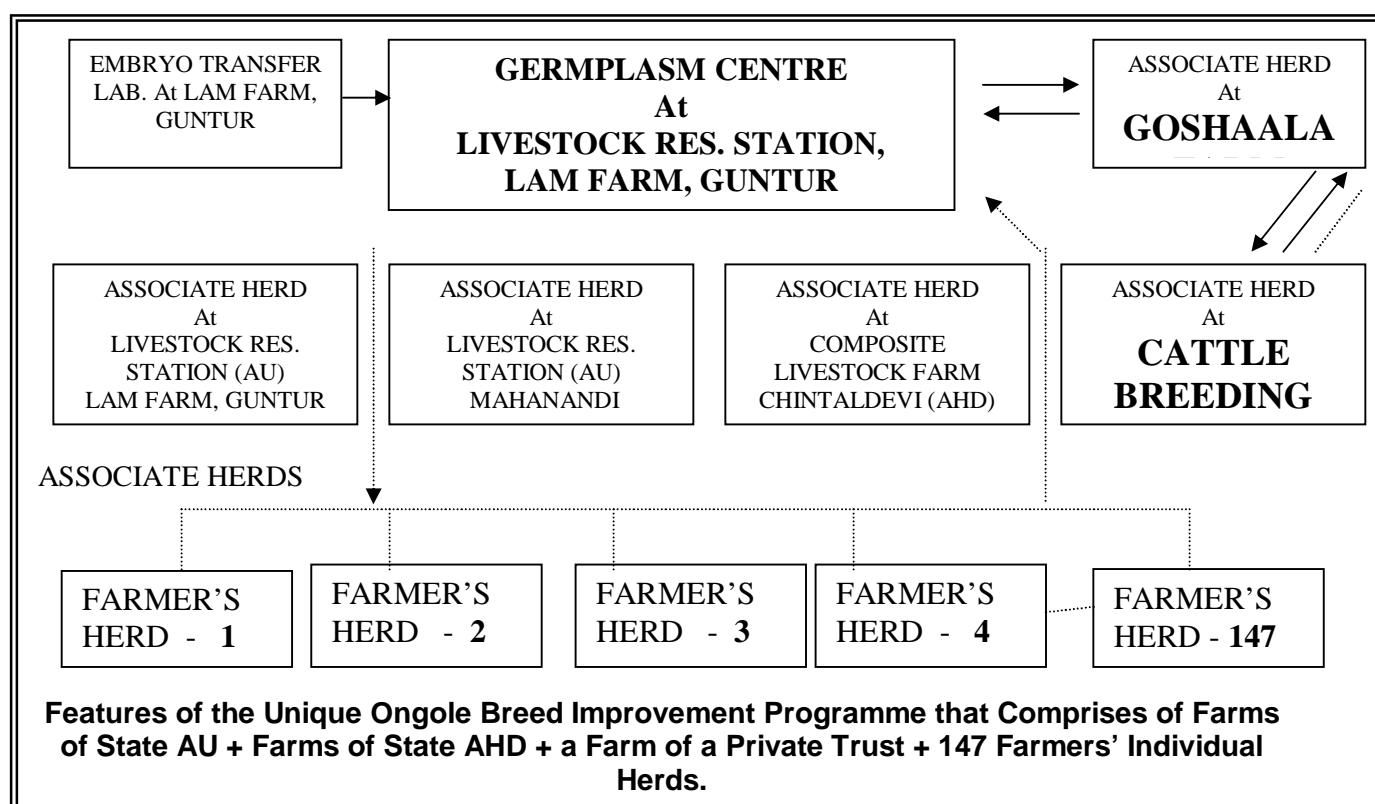
5.1.3 Conservation & Development of Ongole Breed: A stage has come when we had to look to other countries like Brazil for pure Ongole animals are their frozen embryos. Fortunately, Ongole breed's value was realised, and steps were initiated for its resurgence. In this the farmers' interest is most praise worthy. The following measures were initiated to improve the Ongole population in an intensive manner.

1. Establishment of Ongole Breeder's Association as the main vehicle and giving sufficient financial support to it.
2. Herd registration of Ongole animals the provision of inputs to owners of registered animals. Newborn calves of high yielding cows are procured and utilised at Livestock Farms, Bull Mother Farms, Germ Plasm Unit and Frozen Semen Bull Stations for future purpose.
3. Ongole cattle shows are regularly conducted at district/regional level and also at state level and farmers encouraged for breeding Ongole cattle with best pedigree.
4. Embryo Transfer Technology and AI introduced for a faster development of Ongole cattle.
5. In view of the spread of Ongole cattle to several countries, plans are afoot to link up the various research activities carried out in different countries and bring them within a network coordinated by an international organisation as FAO.

5.1.4 Germplasm Centre – The Network Project

1. The Lam Farm of the Agricultural University located near Guntur is the epicenter of Ongole breed improvement activity, where the Germplasm Centre – Elite Herd as well as the Associate Breeding Herd are located.
2. Nearly 150 farmers' herds from villages surrounding Guntur are linked to it as associated herds under this programme.

3. Four more organised farms are functioning as Associate Herds for breed developmental activities to evolve best Germplasm to utilise the areas of the breeding tract and its surroundings. Out of these four farms, two are located at Chintaldevi (Nellore district) and Ramatheertham (Prakasam district), which are functioning under Animal Husbandry Department and the other two at Lam farm, Guntur and Mahanandi in Kurnool district, which are under the State Agricultural University.
4. A *Goshaala* (cow shelter) of a private Trust located at Guntur is also made part of this as an Associate Herd.
5. While all the farms/herds form part of the breed improvement programme, only the herds of the four organised farms of AU and AHD are used for Progeny testing.
6. The animals of the Germplasm Centre-Elite Herd are selected by milk recording, draft capacity studies, as well as for typical features of the Ongole breed, i.e. data recording and animal exchange. No milk recording is done for farmers' animals, but animals are selected based on typical Ongole features and size attained at given age.
7. Cows of this Elite Herd are the donors of the embryos, cows of the Ongole Associate Herd located there are the recipients of the embryos, though a few farmers's animals were also impregnated by ET.



Under the “**Network Project on Genetic Improvement Through Associate Herd Testing – Ongole Breed**” of the Indian Council of Agricultural Research, the work being under taken at the Lam farm is for evolving the best variety Ongole cattle for milk production as well as draught that are of medium body size. Remaining three farms are integrated to this in the breed development activity. Ongole Frozen Semen is also being produced at Frozen Semen Banks Nandyal and Karimnagar, which are under APLDA. This semen is used for Artificial Insemination (AI) activity is from six (seventh one is now ready) available Progeny Tested / selected Ongole bulls. Out of these, three were selected and procured from the field (i.e. bred by farmers) that is born to the best cows in milk yield competitions at the Ongole cattle shows conducted. It is the semen from this programme that is made available to the field AI Centres in the Ongole breeding tract.

5.1.5 Punganur Breed

The Punganur breed of cattle, one of the shortest breed of our country, was first revived from near extinction and is now being preserved, maintained, production and reproduction performances are being studied at the Palamaner Livestock Research Station of the State AU in Chittoor district. This breed, adult specimens of which are just around a metre tall, are said to have been specially bred by the farmers in the bygone ages as a suitable bullock capable of ploughing the narrowest of land strips between rocks; this region is known as Rayalaseema (the land of rocks).

The University's work on Punganur cattle is said to have led to the preservation of the breed that once faced a similar plight as that of Ongole breed, i.e. extinction. This, in turn, has also led to economic milk production under low inputs by small farmers. It is difficult to get recorded information on this subject.

CHARACTERISTICS OF PUNGANUR BREED	
Average body weight of adult males	250 Kg
Average lactation period	265 days
Average lactation yield	656 litters
Average daily milk yield	2.63 litters
Average dry period	185 days

5.1.6 Other Cattle Breeds

Except for the Deoni breed, for which a breeding herd is maintained in Medak district, no organised breeding farm exists for the other cattle breeds. Deoni, Krishna Valley – Deccani, Malvi and Hallikar actually have their home tracts in the neighbouring States, though they are found in the adjoining border districts of AP also. Farmers, naturally value them for their (breeds) suitability to their (farmers) needs and hence are interested in them all these years. Thus they continue to keep them. Natural mating with locally available bulls of the same breed is the most common breeding followed for them. Pure breeding of indigenous breeds is also the breeding policy for the state.

5.2 Buffaloes

5.2.1 Buffalo Breeds of AP: Really speaking there are no recognized buffalo breeds native to Andhra Pradesh, except the local variety that may have different physical and production characteristics in different regions of the country. Nagpuri and Marathwada are really buffalo breeds of Maharashtra, but specimens of the same can be found in the Telangana districts of AP bordering that state. Murrah, though originally hails from Haryana, is the most widespread developed breed in AP (See Table below). The so-called Godavari buffalo found in the Godavari districts is actually a high grade Murrah, stabilized over the decades. True Murrah and high grade Murrah are found in greater densities in the delta south-coastal districts. The credit for this “Murrahing” in AP should go to farmers in the main, but also to the efforts of the AHD over the last several decades.

Developing Indigenous Buffalo Breeds of Andhra Pradesh

(Predominant types D = Draft & M = Milk)

NAME OF THE BREED	CORE HOME-TRACT (Districts)	BREEDING POLICY (See Fig. 2)	MAIN FARMS (See Fig. 1)
Godavari - Murrah (M)	E & W Godavari, Krishna, Guntur	Grading with Murrah breed	Venkataramannagudem, (W. Godavari)
Murrah grades (M)	All coastal districts	Grading with Murrah breed	Murrah PT Farm at Banvasi (Kurnool), Karimnagar

Nagpuri Marathwada (D+M)	or Adilabad, Nizamabad, Karimnagar	Grading with Murrah breed	---
Local (D+M)	All districts	Grading with Murrah breed	---

5.2.2 Buffalo Breed Improvement:

Progeny Testing Programme: The progeny testing unit for selection of Murrah Bulls under farm conditions is functioning at Banavasi since 1972, which is sponsored by Government of India. Another progeny testing scheme is functioning under the State plan for the districts of West Godavari and Krishna for selection of Murrah bulls. A remarkable achievement towards this direction is that, about 8 batches have been completed via milk recordings in buffaloes and 3 batches in crossbreds. Out of these, 3 batches in buffaloes and one batch in crossbreed have been evaluated for the sire performance. These bulls are distributed to Livestock farms for production of superior bulls.

Buffalo Research Station: This institution located at Venkataramannagudem village in West Godavari district, was established in November 1999 literally **by the farmers** as a research station of the State AU. The West Godavari District Cattle Breeders' Association, under the leadership of its dynamic Secretary, has constructed the first shed and donated on bull + 3 + buffaloes + 11 heifers of the pure Murrah brought from Haryana. This formed the nucleus of this farm, further developed by AU under an ICAR scheme as an elite buffalo herd to be used for progeny testing involving the farmers' animals too with field recording of production data. The present herd average lactation yield is around 2,000 litres with a peak yield of above 10 litres. In time to come this farm would play a big role not just in development of Murrah breed, but also in modern feeding and management of buffaloes.

The Venkataramannagudem research station is popular among the local farmers for introducing various fodder crops like Guinea grass, Hybrid Napier (APBN 1 and Co 3 varieties), SSG 59-3, fodder maize, Pillipesara (*Phaseolus trilobus*) and sunhemp (*Crotalaria junica*), *Bracharia Brizantha* Grasses are being grown besides raising pure germ plasm of collection of Napier lines for breeding work. Combinations of complete rations were formulated and prepared in mash form incorporating the sugarcane tops, sugarcane trash and several other crop residues, agro-industrial by products. Many farmers in this sugarcane belt have adopted this feeding system based on complete rations for their buffaloes.

5.3 Sheep & Goats

The practical breeding policy for sheep in the field can be deduced as pure breeding of the Nellore and Deccani breeds of sheep and use of rams of these breeds to upgrade the local sheep in areas where no recognized breeds exist. Similar is the trend for Osmanabadi and Bellary breeds of goats, though Jumnapari breed from north too is used sporadically. Exotic crossbred animals have yet to make any recognizable presence in the field.

5.3.1 Indigenous Breeds: The most widely distributed indigenous sheep breed of the state is the famous mutton breed Nellore, with its three variants – Nellore Brown, Jodepi and Palla,. Deccani, the dual-purpose breed is found in Mahaboobnagar district and areas along the adjoining Maharashtra breed and Bellary is found in Anantapur district and adjoining of Karnataka. Besides, the non-descript type sheep are in the majority.

Osmanabad is the only indigenous goat breed found in areas around the capital city of the state. Please see the Tables below for details.

Developing Indigenous Sheep Breeds Of Andhra Pradesh
(Predominant types W = Wool & M = Meat)

NAME OF THE BREED	CORE HOME-TRACT (See Annexure 4)	MAIN FARMS (See Fig. 1)
Nellore (M) types -		
-- Nellore Brown	Nellore, Kadapa, Prakasam, Anantapuram	Cintaldevi (Nellore), Garividi (Nellore)
-- Jodupi	Kadapa, M'nagar, Nalgonda, Warangal	Chintaldevi (Nellore), Palamner (Chittoor)
-- Palla	Nellore (Atmakur Mandal)	Palamner (Chittoor)
Deccani (W+M)	Mahaboobnagar	Mahaboobnagar
Local (M)	Most districts	

Developing Indigenous Goat Breeds Of Andhra Pradesh
(Predominant types D = Milk & M = Meat)

NAME OF THE BREED	CORE HOME-TRACT (Districts)	MAIN FARMS (See Fig. 1)
Osmanabadi (M+D)	Mahaboobnagar, Rangareddy, Nalgonda, Medak	Mahaboobnagar
Bellary	Karnataka border areas in Kurnool & Kadapa	
Local (M+D)	All districts	

5.3.2 Farmers' Participation: Strictly speaking, most farmer-oriented sheep and goat programmes of the government are for income generation and poverty alleviation. However, since breeding animals are distributed, they can be considered breed improvement programmes, as generally it is the Nellore breed sheep that are distributed as a) breeding rams or b) units of 1 ram + 20/30 ewes.

1. **Sheep Growers Co-operative Federation** was formed during 1996. So far 3237 Primary Sheep and Goat Cooperative Societies and 18 District Unions have been registered. During the 9th Five-year plan, special emphasis is laid on this sector and new projects on semi-intensive sheep development has been taken up under the state plan.

2. **Innovative programmes** are being implemented in Anantapur since 1994-95 and Kurnool and Mahaboobnagar Districts since 1995-96 through District Rural Development Agency with an outlay of Rs. 97 millions. This mainly comprises of forming sheep farmers, groups and channeling supply of quality animals through them on loan plus subsidy basis.

3. **Integrated Sheep and Wool Development projects:** The Central Wool Development Board has sponsored 3 such projects Mahaboobnagar, Nagarkurnool and Kurnool since 1995-96 for the benefit of the sheep breeders with an outlay of Rs. 3.2 millions. Another 3 such projects are sanctioned in Rangareddy, Warangal and Nizamabad districts during 1997-98. Apart from supply of quality animals, this project has also aspects of shearing, wool handling and marketing.

4. **Area based project for wool development** was also sanctioned with an outlay of Rs. 2.3 millions at Jogipet, Medak district purely for the benefit of wool weavers. Machine shearing cum training programme for the shepherd youth is being implemented in 3 districts.

5. Many **NGOs** have had and still have programmes for distribution of sheep and goats (but as per government guidelines).

6. **A.P. Livelihood & Velugu Projects:** Distribution of small ruminants is also an important activity under the new watershed area based programmes of the Andhra Pradesh Rural Livelihood Programme (APRLP) and the World Bank aided Velugu project of the state government.

The State AHD has always a say in the type and breed of animals distributed and the sources are generally the government breeding farms or animals purchased from farmers in the breeding tract. Apart from supply of breeding animals, the schemes have also different other programmes like vaccinations, deworming, CPR development, shearing and wool processing and marketing.

5.4 Poultry Breeding

As mentioned in the previous Chapter, poultry breeding is almost exclusively in the hands large of commercial breeders who are either Indian companies or subsidiaries of multinational poultry breeding companies. They go for commercial layers and breeders and they have a well organized marketing network. The State AU is rather the only organization that has tried to breed the Aseel breed of poultry native to the tribal forest rich areas. This breed was also used to develop strains like Giriraja or Parvathraja that can thrive under scavenging system of backyard poultry keeping.

The AU at Rajendranagar centre is maintaining two pure line White Leghorn strains of IER 90 viz. IWD and IWF. These two strains are under continuous selection for improved performance. Simultaneously, strain crosses of these two strains were also maintained. An increased production of about 16 eggs in IWD and IWF strains was recorded in present generation than that of previous generations. Otherwise the most common bird in the villages is the local country bird, which could be a descendent of the wild Aseel breed.

Pigs: Farmers, especially of weaker sections were economically benefited by the rearing graded Large White Yorkshire x local pigs and are demanding their supply in large numbers. The ADH/AU farms at Gannavaram and Tirupathi are the main sources of animals supplied to the keepers under various beneficiary oriented scheme.

5.5 Innovations in Indigenous Breed Improvement

5.5.1 Observations & Remarks: Based on the observations presented in Tabular form in Section 5.5.2 below the following conclusions may be drawn with regards to improvement of indigenous livestock breeds in Andhra Pradesh.

1. The private breeders, generally rich farmers or businessmen, are primarily responsible for large-scale introduction of Murrah breed in AP from Haryana, long before government intervened. Now that the AHD, APLDA and AU are in the field the private breeders have only a limited role today. But this class of individuals may be still relevant in other states.
2. *Goshala* (cow shelter) is an age-old institution well known to Indians and existing throughout the length and breadth of India. Philanthropists or religious institutions mostly run them. They can very well be used in livestock development, provided their organization is standardized and regularized. Short-duration versions of *Goshalas*, the animal camps, are also well known for provision of feed and shelter to animals during natural calamities.
3. Formation of the livestock breeders associations and using them as a channel for service delivery seems to be a very prospective step. The APLDA is on the right tract in developing and working through District Livestock Development Associations.
4. There are good literature sources that define the phenotypic and genotypic characters of the indigenous breeds of livestock available in India, including Andhra Pradesh. Information is available also on Internet for 'Ongole', 'Nellore', 'Brahman' and other cattle breeds.

5. Buffalo Breeds:

- a) **Farmers:** The dairy animal universally sought after by the farmers of Andhra Pradesh is the buffalo. The breed of buffalo ranges from the local to the pure Murrah. Buffaloes of the whole range have a place in the farmer's scheme of things. Local are low grade Murrah animals are sought in areas with low feed availability, weaker health services and management levels like the tribal areas and remote areas of Telengana and north coastal Andhra. Farmers in the well-developed delta districts of Godavari and Krishna seek even pure Murrah.
- b) **Government:** The universal government breeding policy for buffalo (See Section 5.1) is grading up with selected Murrah or grades Murrah bulls. Towards this end Progeny Testing, Bull Mother Farms, Frozen Semen Stations etc. are in place. Some NGOs (Anthra, Gram Abhyudaya Samithi and Youth for Action in Telengana and Sarada Valley Development Samithi Mahila Bank Members in north-coastal Andhra feel that Murrah or high-grade Murrah buffaloes are too difficult to feed and manage by the resource poor small farmers. Interviews with some farmers' representatives by these authors too substantiate this view. The government's declared policy of grading up local buffaloes with Murrah germplasm in such regions has to be reassessed from this point of view. Due to budgetary constraint some government farms do not seem to be functioning to their rated capacity in breed developmental activity and there is a need to strengthen these farms and provide the financial assistance.

6. Cattle Breeds:

- a) **Farmers:** Bullock is still the backbone of agriculture in AP as a whole. Bullock may be marginally less important only in progressive delta / south-coastal districts, where agriculture is well developed. Also the crossbreds may not be well suited to the feeding and management regimen obtaining in resource poor small farmers. This is the view of many NGOs working with small farmers since a long time. Also, the farmers seem to be showing ready interest in obtaining draft breeds of cattle that are traditionally found in their region.
- b) **Government:** While draft cattle still seems to be the need, the whole orientation of the state breeding policy is to improve milk production. Draft and milk production are said to be inversely related, genetically speaking. This is the dilemma scientists involved in Ongole breed development feel. Correctly, the breeding policy now for indigenous breeds is pure breeding. However, the relative merits of using exotic breed versus recognized Indian dairy breed has to be reconsidered.

7. Sheep & Goat Breeds:

- a) **Farmers:** Nellore, especially the Nellore Jodepi strain, is the most popular sheep breed sought by farmers. Mutton from Nellore sheep has premium quality, while its skin also fetches good price. Deccani a dual purpose sheep breed (meat + wool) is the one the sheep keepers traditionally rear in Mehaboobnagar and surrounding districts. However, due to loss of skills in manual shearing, wool processing, yarn making and weaving in the younger generation, people are switching from Deccani to Nellore, which is rather unfortunate. Exotic crosses have yet to be introduced in the field.

Osmanabadi, a goat breed native to Marathwada region of Maharashtra, and Bellary goat native to the north west arid region of Karnataka are reared by farmers in the districts adjoining to these states. Otherwise, the local goat in the state as a whole is of mixed type.

b) **Government:** Government too promotes Nellore breed of sheep in the main. The danger of losing Deccani in Mehaboobnagar district area due to large-scale introduction of Nellore has to be viewed with concern. This can be best done by training and provision of custom wool processing units through the medium of the Sheep Breeders' Associations. There is scope for introducing the Barbari breed of goat as an improver breed for local goats, especially as the experience on some government farms proved.

8. **Livestock Breeder's Associations:** One common feature for all the breed development activities is the positive contribution of Breeder's Associations. It is refreshing to note that the ADH / APLDA is involved in their creation and support. However, such associations are constrained due to lack of professional management and shortage of funds. This is especially true with regards to Sheep Breeders' Associations as shepherds are from weaker sections.

Thus a programme of support – financial, training, communications etc., with appropriate supervision and monitoring would go a long way in further strengthening the breed development as well as other livestock development services.

5.5.2 Innovations in Indigenous Breed Development (Please see next page)

INNOVATIONS IN INDIGENOUS BREED DEVELOPMENT

	Active since	What do they do (keywords)	Justification Why do they do	What technical / scientific support	Size of area / effort	Farmers involved / at what level
1 Private Breeders <i>Innovation: Pioneers</i>	Since decades	Import, breed & sell Murrah buffaloes	Business	Traditional knowledge, by Local vet	Trade in south-coastal delta districts	Self with hired help
2 WG District Cattle Breeder's Association <i>Innovation: Stakeholder initiative</i>	1999	Initiated establishment Buffalo Res. Station by donating 15 pure Murrah buffaloes	Felt need for the Station to help farmers in buffalo development	By State Agricultural University with ICAR	WG district with BRS as the center	Needy farmers visit, seeking advice, interactions, obtaining fodder seed & material
3 Guntur Districe Cattle Breeder' Association <i>Innovation: Demanding high-tech</i>	1992	Ongole cattle breed development as associate herds	Pride, prestige, status, breed conservation	By Staff of Ongole Network Project at Lam, Guntur	40 villages around Guntur	Seeking AI & ET of selcted or test bulls and coop in data collection
4 <i>Goshaala</i> (Cow shelter farm), Guntur (Private Trust) <i>Innovation: Fruitful pvt. Collaboration</i>	1996	Ongole cattle breed development as an associate herd	Wish to help in development of the Ongole Breed	By Staff of Ongole Network Project at Lam, Guntur	The Ongole cattle of their farm	Permitting AI & ET and data collection
5 NGOs, Beneficiary oriented schemes <i>Innovation: NGO + Govt. collaboration</i>	At least a decade or more	Supply of quality sheep and goat breed specimens to weaker sections	Mandate of the NGOs (felt need) and Scheme	AHD staff	In the area of their operation (roughly 50% of the needy)	Procurement and distribution of rams and ewes of Nellore breed

6. OTHER LIVESTOCK SERVICES

6.1 Overview of Livestock Interventions in RD Projects

The Centre for Public Perception and Policy, Hyderabad (cenpap@tatanova.com) has studied the performance of the livestock development interventions in the following AP projects - Andhra Pradesh Participatory Tribal Development Projects, Andhra Pradesh Community Forest Management Project, Watershed Development Programme and Andhra Pradesh Rural Reconstruction Programme (Velugu). Some of the findings of this study are worth consideration in some details. Similar were the results of the NIRD study on the project 'Semi-Intensive Sheep Farming In Anantapur District'.

6.1.1 The Interventions

1. Beneficiary oriented schemes in which milch animals and small ruminants are supplied under various programs for targeted beneficiaries. The range of benefits varies from one programme to another and so does the cost per beneficiary.
2. Breed improvement programs under which quality bulls are supplied to target villages for improving the local breed stock.
3. Mobile veterinary services under which curative and care is provided for interior villages not having any veterinary facilities nearby.
4. Community Development component in which land site is identified from village common lands for raising of fodder crops to make green fodder available within the village as well as to reduce dependence on forests.
5. Community organizations are evolved in the form of self-help groups and federated at village, cluster and mandal level for taking up co-operative diary units. This is largely attempted to address the issue of marketing of milk and milk products for livestock owners.
6. In addition, the livestock development scheme has a Gopala Mitra Programme in which they train and provide village level animators for cross breeding services as well as to carry out small treatments to animals, on payment.

6.1.2 Observations: Though all these impressive activities and innovative approaches envisaged under various projects for these interventions, nowhere all these inputs are provided in an integrated manner. Generally the programmes are implemented in a piecemeal approach with little convergence both at the implementation and target group level. Some of their findings are as follows.

1. Conducting the mega Veterinary Camps in agency areas were of little use to tribal livestock owners whose preference to take up livestock activities for income generation is not evident in the first place due to low yield from animals in these areas.
2. Conducting preventive vaccination programmes in endemic tribal area had not been very successful in eliminating disease and mortality of animals in tribal areas.
3. Distribution of superior quality breeding bulls for up gradation of the local non-descriptive cattle by introducing good germplasm in the existing livestock did not evince much participation due to preference of local stock in lieu of crossbred animals. The local stock's endurance in withstanding lack of adequate water and nutritious feed had been the main reason.
4. Artificial Insemination program too suffered due to overwhelming preference of people to local breed for work, which is at variance with the state breeding policy.
5. Supply of milch animals did not result in income flows to rural households as they often end up in distress sale as well as motivated by making quick money instead of generating subsidiary income to the family.
6. Due to lack of adequate fodder and nutritious feed, Plough Bullocks were successful only in areas where green fodder was available in plenty.
7. Birds supplied under backyard poultry to supplement family nutritional food needs did not yield positive results in tribal areas due to traditional food habits.

8. Development of fodder crops as envisaged could not be implemented due to low prevailing rates for fodder crops. Farmers were unwilling to raise fodder crops in place of paddy and other cash crops.
9. Supply of fodder seeds did not benefit much as identified fodder plots at most localities were of degraded quality that required land improvements inputs which were absent.
10. In the absence of quality improvements for livestock products, attempts to improve marketing arrangements were not so successful.
11. Development of community organizations like SHGs, village federations and user groups required greater social mobilization techniques for active participation. However officials at grass root level had varying levels of understanding on community participation and NGO involvement were just mandatory. Hence successful co-operative dairy units were possible only in districts where dairy industry itself has made inroads and supported village dairy activities.

These findings, made by M&E people, may be taken as neutral observer's views worth consideration in organizing and modifying the livestock development interventions that may be taken up in future.

6.2 Other interventions: Some of the following examples of interventions (See Table below) are good examples of utility of coops as a means of livestock development that are worth emulating. In Andhra Pradesh, the Mutually Aided Cooperative Societies Act of 1995, gave even to the village level cooperatives powers to decide on their own policy, plans and funds utilization without seeking the approval of the Govt. Cooperatives Department, provided they follow the democratic rules of running coops under this Act. This new arrangement gave freedom to coops from control by government officials in their day-to-day business.

Thanks to this **innovation** small farmers in dairy and small ruminant sectors too could come up with programmes for mutual assistance for the benefit of all, they being the decision makers, the benefactors, as well as the beneficiaries.

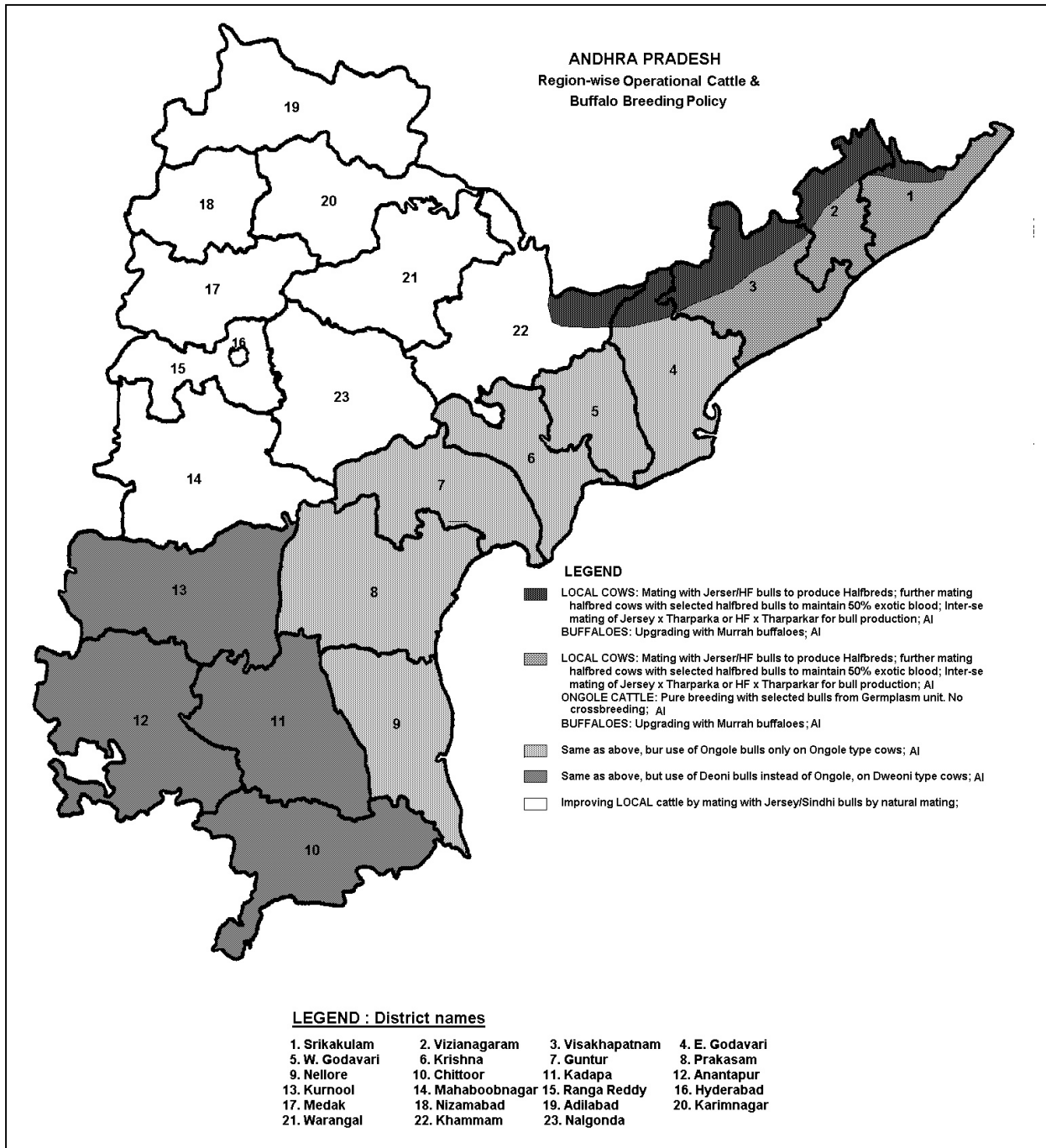
1	Legal nature of service/ organization	Area/ population coverage/ Quantity	Service structure and mechanism delivery	Focus area/ type of customers	Service contents/ What is on offer	Level of innovation
Feed & Fodder Development Innovation: <i>Small farmer stakeholder initiative</i>	MACS Federation-Cooperative	Ananthapur	1. Discussions with MAC Federation on the idea of collaborating with non-rearers – small and marginal landholders; 2. Idea of 100% cost recovery;	Small & marginal farmers	Identified consultants Area of operation surveyed with cadastral maps, satellite images. Grazing end points identified during normal season. Identified 9 watersheds in 5848 ha. As pilot one watershed of 1920 ha. Identified.	Yet to see – but feels optimistic. Technical committee, stakeholder platforms and committed coordinator would be essential for the success of the programme.
3. Women promoters identified by Primary societies; 4. Women SHGs formed; 5. Thrift & credit initiated; 6. Women take loan from primary societies for purchase of ram lamb units from other rearers in the village; 7. Vet identifies suitable ram lambs for breeding – reared for one year before selling to flock in another village. For meat ram lambs sold at of 6-9 months of age. <i>Courtesy: Ms. Rebecca Katticareen POA-Hydera-bad</i>						

2	Legal nature of service/ organization	Area/ population coverage/ Quantity	Service structure and mechanism delivery	Focus area/ type of customers	Service contents/ What is on offer	Level of innovation
Focus on women in Small Ruminant production <i>Courtesy: Ms. Rebecca KatticarenPO A-Hydera-bad</i>	Women Self Help groups	Informal group of women from rearers' families	Mutual cooperation and sharing tasks	Most of the rearers	Ram Lamb rearing for meat and for selected breeding rams.	
3	Legal nature of service/ organization	Area/ population coverage/ Quantity	Service structure and mechanism delivery	Focus area/ type of customers	Service contents/ What is on offer	Level of innovation
Credit for milch animals <i>Innovation: Women stakeholder initiative</i>	MACS Mahila Banks (Women's Bank) Built by SVDA an NGO	Mamidipalem (5000 members) & Achyutapuram (3000 members) villages in Visakhapatnam district	SHG Groups > Clusters > Villages > Women's Bank - a pyramidal structure of operations; decision making by members only	Women including weaker sections (special emphasis)	Easy sanction of credit for purchase of milch animals on generous terms	Very high. So far 90% of the members in 40 villages got loans, 35% members take dairy loans every year

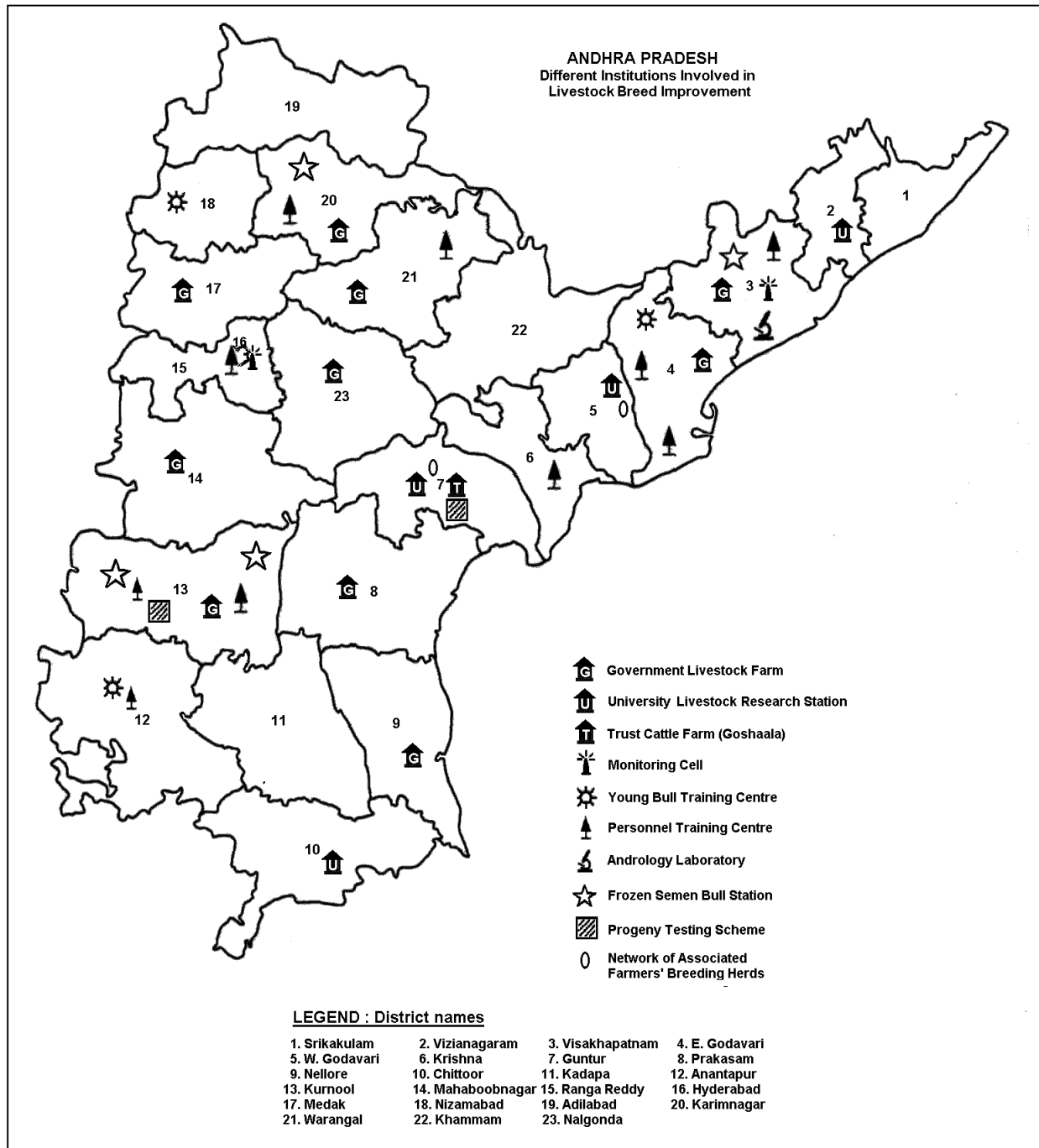
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END OF THE MAIN REPORT**ANNEXURES TO FOLLOW >>>**

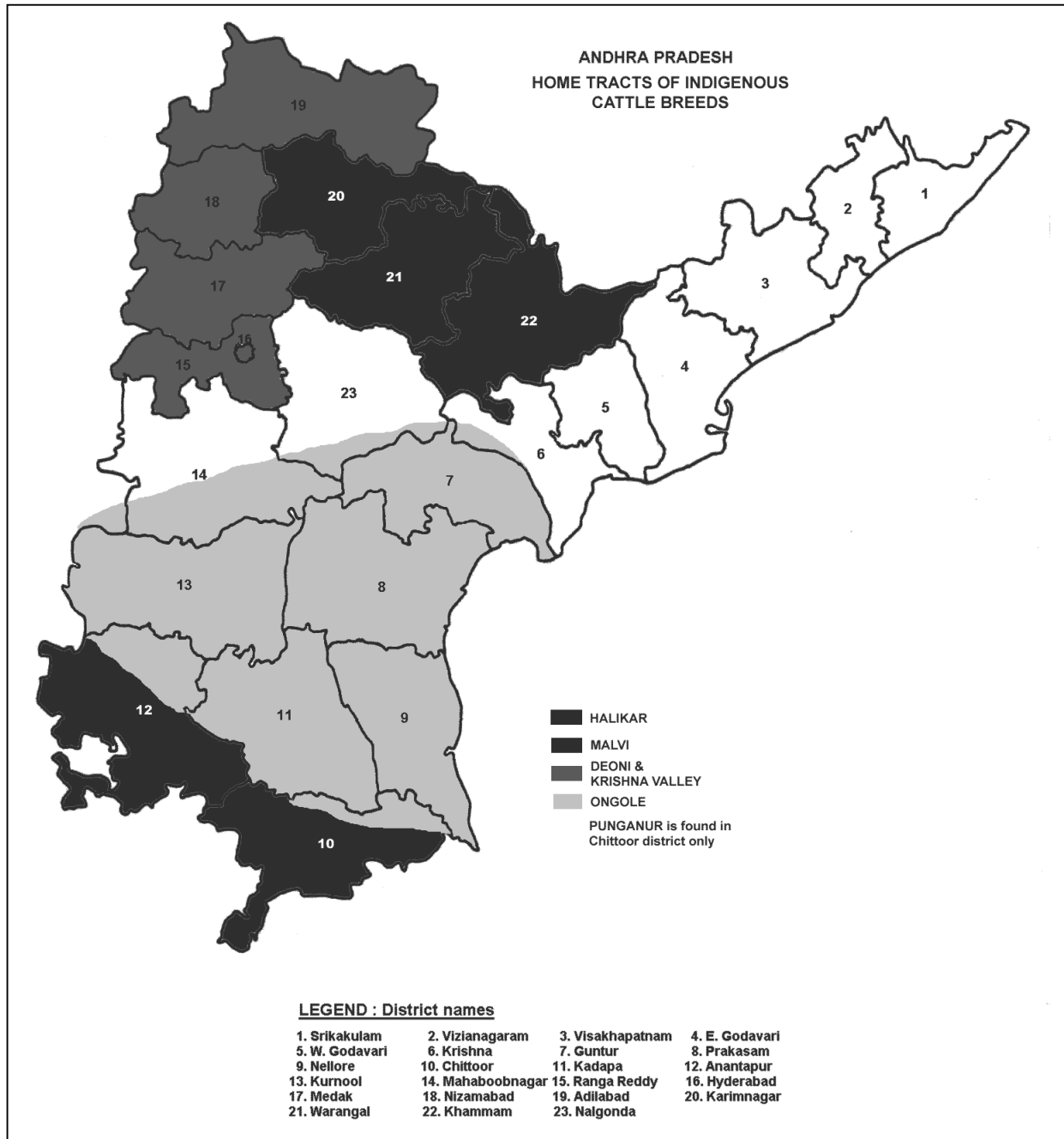
Annexure 1: Operational cattle and buffalo breeding policy for different regions of Andhra Pradesh.



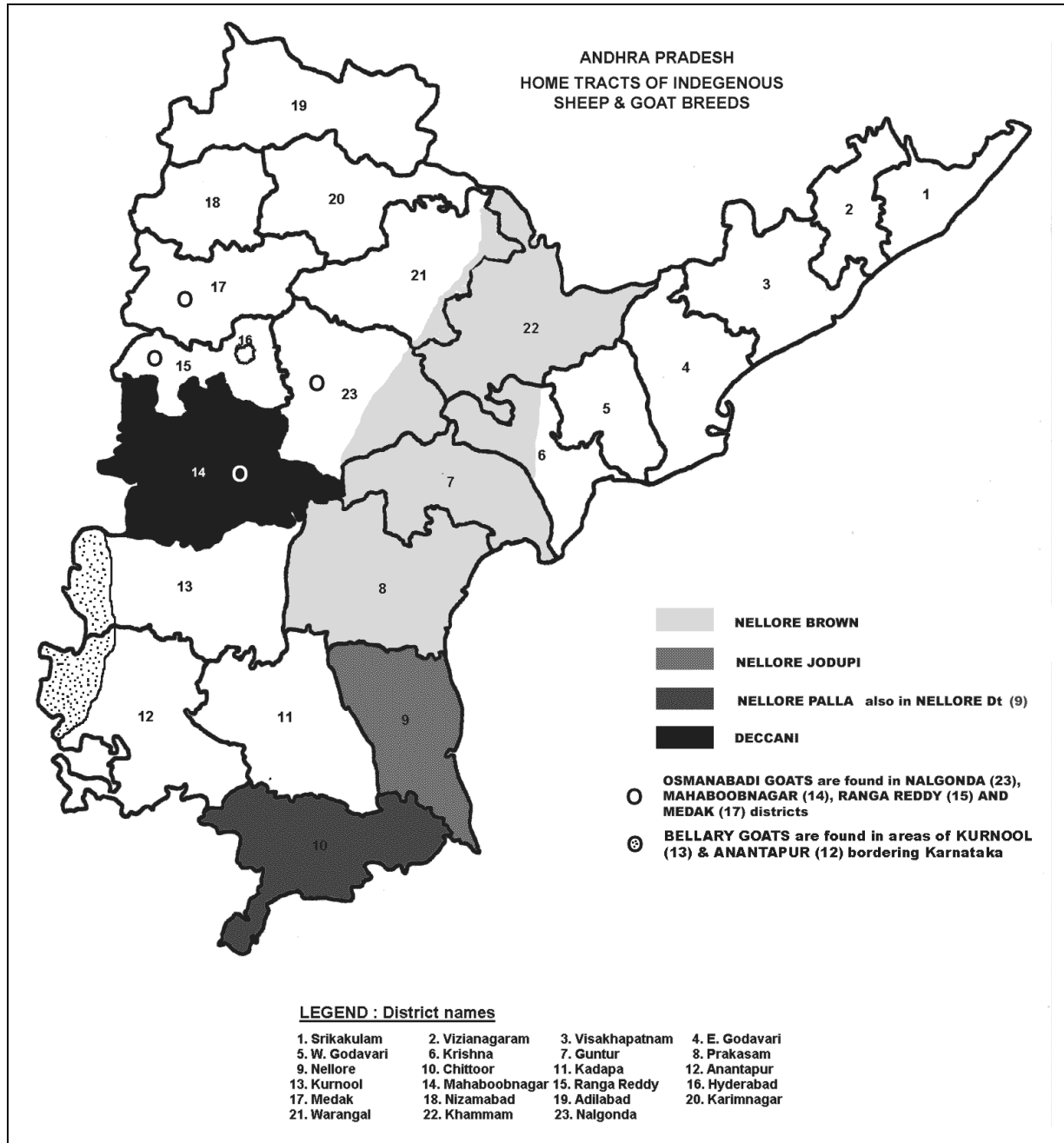
Annex 2: Various units of the State Animal Husbandry Department & Agricultural University involved in development of Indigenous cattle & buffalo breeds of Andhra Pradesh.



Annex 3: Home tracts of indigenous cattle breeds of Andhra Pradesh.



Annex 4: Home tracts of indigenous sheep & goat breeds of Andhra Pradesh.



ANNEXURE 5

PLACES VISITED, PERSONS CONTACTED AND DOCUMENTS COLLECTED AND CONSULTED BY THE CONSULTANT

Persons/Organisations Contacted: The focus of discussion with individuals met was on innovative programmes for livestock development and innovations in livestock services.

At Hyderabad

1. Director, Animal Husbandry Department of AP, Hyderabad and other senior officials.
2. CEO, Andhra Pradesh Livestock Development Agency, Hyderabad
3. Professor (Animal Breeding), Professor (Livestock Prod. Management) & Professor (Livestock Extension), A.P> Agricultural University, Hyderabad
4. Dy. Commissioner, AP Coop Dairy Federation, Hyderabad
5. Director General, Director M&E & Livestock Specialist, National Institute of Rural Development, Hyderabad
6. Dy. Director, Agri Biz Centre, National Institute for Management of Agriculture Extension, Hyderabad
7. Senior Scientist & i/c Livestock Research, Central Institute for Dryland Agriculture, Hyderabad
8. Deccan Development Society, Hyderabad and NGO
9. Anthra, Hyderabad an NGO
10. J.K. Trust Gram Vikas Yojana, an NGO
11. NRMPA, Hyderabad an organization of SDC
12. The Centre for Public Perception and Policy, Hyderabad

Dt Nizamabad (Telangana)

13. Joint Director, Dept Animal Husbandry
14. Grama Abhudaya Samithi, Dharmavaram and NGO
15. Mr. Narayana Reddy former MP, Progressive Farmer & organiser of Krushi Darshan Extension Centre
16. Private buffalo breeders (4)
17. Sheep Breeder's Association

Dt Mahaboobnagar (Telangana)

18. Joint Director, Dept. Animal Husbandry
19. Government Livestock Farm
20. Sheep Breeders' Association

Dt Anantapur (Rayalaseema)

21. Joint Director, Dept Animal Husbandry
22. Sheep Breeders' Association

Dt Chittoor (Rayalseema)

23. Joint Director, Dept Animal Husbandry
24. Veterinary College (Dept. Livestock Production & Management), Tirupathi
25. J.K. Trust Gram Vikas Yojana Field Centre for Cattle & for Buffalo
26. Rashtreeya Seva Samithi, and NGO and its STEP Project (Women in Dairying)
27. Balaaji Hatcheries, Chittoor
28. Livestock Research Station, Palamner
29. Centralised Semen Collection Centre, Tirupathi
30. Velugu Project, Chittoor
31. Heritage Foods, Private Dairy, Chittoor
32. Sheep Breeders' Association

Dt Guntur (South coastal Andhra)

33. Joint Director, Dept Animal Husbandry
34. Centralised Semen Depot
35. District Veterinary Poly-clinic
36. Training Centre – Refresher courses for VAS, Gopalmitra (paravets) and farmers' training
37. Livestock Breeding Farm & Research Station, Ongole Germ Plasm Unit Lam

38. Ongole Cattle Breeder's Association (Owners of Associated Herds)
39. Some practicing Gopalmitras
Dt Prakasam (South Coastal Andhra)
40. Ongole Cattle Breeding Farm, Chadalavada
41. Ongole Cattle Breeders' Association
Dt West Godavari (North Coastal Andhra)
42. Murrah Breeding Farm, Venkataramannagudem
43. Some practicing Gopalmitras
44. Chairman, District Livestock Development Association
45. Sheep Breeders' Association
Dt Visakhapatnam (South Coastal Andhra – Delta)
46. Joint Director Animal Husbandry
47. Visakha Livestock Development Agency
48. Centralised Frozen Semen Station
49. Bull Mother Farm other Farm Units
50. Visakha Dairy covering 4 districts
51. SVDS an NGO & the Coop Mahila Banks at Mamidipalem and Haripuram
52. Velugu Project Discussion
53. Dol[hin Milk, a private dairy
Dt Srikakulam (South Coastal Andhra)
54. Velugu Project discussion

Publications Collected & Consulted

1. Annual & Special Reports of the Animal Husbandry Department at State level and of the districts visited
2. Annual and other Reports of all the other Institutions visited.
3. Reference of relevant material in the Libraries of APAU, NIRD & MANAGE with the help of PG students of APAU.
4. Training Manuals, Extension Publications, Activity Brochures of organisations.

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Annexure 6

INVESTIGATION RECORD

Species: Cattle / Buffalo /
Sheep / Goat / Pig / Poultry

ON INNOVATIVE LIVESTOCK SERVICES

PLEASE USE ONE SHEET FOR EACH REPORT / STUDY / INTERVIEW	1. Date:	2. Place:
	3. Investigator:	4. Informer:
Consultant: Prof. Dr. N.S.R. Sastry Phone: 0891-2511173; E-mail: nrsastry@eth.net	5. Report/Study period (year):	
	6. Report/study location (State/District etc):	

SERVICE TYPE	ACTOR(S) OF INNOVATIONS	NATURE OF ACTOR	COVERAGE EXTENT	ACTIVITIES COVERED	MODUS OPERANDI	SUCCESS LEVEL	REMARKS
<i>Please see the list given below and try to give, as far as possible, clear information on each service. In the following columns give info On lined indicated, to the best of your judgment.</i>	Individual: Villager (M/F), Group leader (M/F), Other (specify) Organisation: Coop., Panchayat, NGO, Govt., Company, Social, Religious, Other (Specify)	Individual, Elected leader, From _____ organisation, Registered / Govt. / Formal / Informal / Other organisation	% farmers / households / animals / villages covered out of total under the actor; (Served/Total for any or some	Which activities are being implemented under this service type? Give as activity 1,2,3 etc.	How actually these activities are being implemented on the ground? Give as items 1,2,3 etc.	If we can give '3' to govt. provided service regarding its efficiency, how many marks (1 – 5) can be given to this innovation action. And why?	Most relevant observations to this Actor – Innovation – Implementation. Give as observation 1, 2 3 etc.
Treatment							
Vaccinations							
Health Camps							
Indigenous Medicines							
Artificial Insemination							
Natural Service							
Embryo-Transfer etc							
Choice of breed, why?							
Local breed development							
Feed & Fodder development							
Grazing							

Extension service							
Feedback from farmers							
Marketing							
Focus on Women in Livestock Production							
Other (Specify)							
Benefits from livestock keeping (Cash returns, livelihood, social, etc)							

END OF THE REPORT

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