



# Reviving Deccani Sheep Breed for Climate Resilience

Processes emerging from the experience of  
Andhra Pradesh Drought Adaptation Initiative (APDAI)



THE WORLD BANK



Commissioner, Rural Development  
Government of Andhra Pradesh



**S**mall ruminant production systems evolved in the specific ecological niche of rainfed areas. Productive agricultural land and water, the scarcest of the natural resources are not dedicated either for developing these production systems. Depending mainly on grasses, crop fallows and browsable scrub vegetation, these small ruminants convert the natural biomass and agriculture residues into incomes and manure. Not severely affected by the dry spells, they balance the negative impacts of droughts. For these reasons, the AP Drought Adaptation Initiative (AP DAI program)<sup>1</sup> piloted several initiatives to strengthen the sheep and goat production systems. The pilot initiatives have evolved from intensive analysis and discussions with the sheep and goat rearer groups.

This publication captures the analysis, design and processes of AP DAI initiative on promoting the native drought resilient Deccani breed of sheep. The initiative was grounded in partnership with the Sheep rearer groups and the Federation of SHGs – Mandal Mahila Samakhya (MMS).

## Sheep Breeds, Climate Change and Drought Adaptation

The Deccani sheep breed can survive prolonged drought conditions, walk long distances (for migration), and is able to utilize coarse forage for growth, reproduction and lactation. With dense wool on its body, it can also withstand harsh winters and high diurnal temperature variations. Deccani is a native sheep breed in the (AP DAI) project areas of Mahabubnagar district.

High incidence of inbreeding and improper breeding practices reduced average body weights in the sheep flocks over time. Collapse of market for coarse black wool negated the advantage of the deccani sheep having wool. The Animal Husbandry department introduced the red colored Nellore breeds through its sheep improvement programs in the last two decades. These Nellore sheep breeds evolved in sub-humid coastal areas as against the semi-arid conditions of the deccani. With the ability to have quick and higher body weight gains and also owing to an established organized supply chains of breeding rams, the Nellore breed gained ground over time even with some of the traditional sheep rearers in the semi-arid tracts.

Sheep production systems in the Deccan plateau in India are highly specialized and identified with a specific community (caste) predominantly involved in breeding. The popular Deccani breed of black colored sheep evolved in this region over time specially adapted to the climatic and natural resource conditions.

<sup>1</sup> AP DAI is a pilot program to evolve various drought adaptation measures. It was supported by the World Bank and anchored by the Rural Development Department of the Government of Andhra Pradesh. The pilot was implemented in Mahabubnagar and Anantapur districts of Andhra Pradesh. It was founded on the platforms of Mandal and Village level Women Federations (MMSs), facilitated by Society of Elimination of Rural Poverty (SERP). WASSAN extended technical and process facilitation support to the initiative. For more details, visit [www.wassan.org/apdai](http://www.wassan.org/apdai)

Seeing the advantage of quick body weight gains, Nalgonda, an adjoining district, has almost shifted to Nellore breed while several of the flocks in Mahabubnagar district are getting mixed. However, being native of a different agro-climatic region, the Nellore breed suffers from several disadvantages such as difficulties in sustaining harsh drought conditions, inability to walk long migratory distances, excessive grazing that may result into degradation of pastures, vulnerability to diseases and intolerance to high diurnal variation in temperature and harsh winter season.

In the long-term drought adaptation perspective, Deccani breed of sheep is more resilient and balances the sustainability of natural resource use and productivity. The draft breeding policy of Government of Andhra Pradesh also recommended promotion of deccani breed in its native tracts. However, it is not in practice as most of the Animal Husbandry Department's 'development' efforts use Nellore breeding rams.

WASSAN's earlier efforts in organizing sheep rearers into groups, developing their institutional capacities and establishing community managed services provided deeper insights into the issues confronting sheep rearing in the project Mandals. Initial consultations with sheep rearers' groups, experts in the field and officials of the Animal Husbandry department led to taking up the pilot initiative on breed improvement in sheep with a focus on deccani breed for better drought resilience under Andhra Pradesh Drought Adaptation Initiative.

### Observations in Situation Analysis

The initial situation analysis brought out the following issues related to breeding practices in the area:



### Sheep rearing in the context of Climate Change

Climate change forecasts high intensity and off-season rains, higher temperatures and higher diurnal temperature variations.

Off-season rains in March-May help in regenerating grasses and scrub biomass in the summer and most fodder scarce months, easing the fodder scarcity. Filling up of water bodies due to high intensity rains also benefit sheep rearing with moisture spread and availability of drinking water.

However, changes in the rainfall distribution may bring in an element of unpredictability in disease incidence. Also, increase in temperature and higher diurnal variation necessitate a more resilient breed that can sustain in harsher climatic conditions. The local and time-selected Deccani breed of sheep has better resilience in these aspects and is recognized to be the most appropriate breed for the area.

- ❖ Selection of rams from the same flock and keeping it for long periods and servicing many generations resulting in high levels of inbreeding.
- ❖ Using over-aged rams resulting in lower conception rates
- ❖ Mixing up with Nellore breeds as reflected in the change of color from black (and variants) to brown.

The breed improvement initiative evolved appropriate strategies to address these issues.

#### Sheep population in Project Mandals

Sl. No	Mandal	Total sheep population	Rams required (1:25)
1	Kosgi	46300	1852
2	Dowlathabad	28401	1136
3	Bomraspet	20863	834
	<b>Total</b>	<b>95564</b>	<b>3822</b>



### Deccani Breed Restoration Strategy

There is a population of 95564 sheep in the three project Mandals in Mahabubnagar district. Though there is no complete shift towards other breeds, contamination with non-deccani breeds was spreading. There was a larger challenge in restoring deccani breed, as sheep rearing was almost entirely a private enterprise of traditional rearers, with little state support. The emerging preference of rearers towards Nellore breeds, with short term productivity gains in mind, was a cause of concern.

After considerable discussions, a strategy was devised to replace rams in the existing flocks with Deccani rams sourced from outside the Mandals, preferably from areas where the flocks are not contaminated. Strategically focusing on flocks of an entire village and total replacement of rams in several contiguous flocks (Manda<sup>2</sup>) provides an open nucleus for supply of quality ram-lambs that can be reared to breeding rams. These open nucleus flocks can be a source for selection of deccani breeding rams locally for breeding ram replacement in other flocks.

It was thought that the sheep rearers organized into groups provide an institutional base for the entire program and a mechanism of exchange of rams can also be introduced over time on this institutional platform. It was also envisaged that a mechanism will be established for purchasing ram-lambs from the open nucleus sites and establishing 'deccani ram-lamb rearing' as a supplementary livelihood activity among the SHGs. Linkages with Animal Husbandry Department's Jeeva Kranthi program that supplies breeding rams at subsidy were also established. The breeding strategy thus evolved, had the following strategic elements:

- ❖ Sourcing of deccani rams from traditional deccani areas without contamination of other breeds and replacement of rams in the entire flocks i.e. establishing open nucleus sites for deccani ram production. Deccani rams of about one and half years are to be directly introduced into the flocks at the rate of one ram for 25 ewes.
- ❖ Establishing mechanism of purchasing ram-lambs from the open nucleus sites and also from traditional deccani tracks; promoting ram-lamb rearing as a supplementary livelihood activity of the poor. They are to be encouraged to take 2 to 5 ram lambs of about 3 to 4 months age for rearing up to one to one and half years age.
- ❖ Selection of breeding rams from the ram-lambs reared by the traditional rearers for replacement of rams in their flocks; the culled ones are sold in the market for meat.

<sup>2</sup> Manda is a local term used for flocks of few rearers who graze their flocks together

As a part of an earlier program of WASSAN, a rearer group in Suraipalli village in Daultabad Mandal in Mahabubnagar district completely replaced breeding rams in their flocks with deccani rams sourced from Maharashtra. The village had 7 shepherds, with a total sheep population of 580, mainly ewes. After intensive facilitation, they came forward to introduce deccani rams into their flocks. Accordingly 28 rams were given to them. Positive results of increased birth weights, higher lambing rates and higher weight at the time of sale were observed by the rearers. This has become a point for exposure visit and a 'learning site' for the AP DAI pilot initiative.



## Processes and Experience

- ❖ Taking the rearers to deccani tracts for selection and purchase of rams for replacing breeding rams in their flocks.
- ❖ Organizing general awareness programs on sheep rearing including breeding on the platform of organized sheep rearers' groups.
- ❖ Extending vaccination services through the larger pilot initiative on Community Managed Vaccination Services.
- ❖ Providing insurance coverage for ram-lamb rearing extended from the community managed livestock insurance program; another pilot initiative under AP DAI along with United India Insurance Company Ltd.

Though it was contemplated to establish special nucleus flocks of deccani for constant supply of ram-lambs, it could not be grounded as it was an expensive proposition.

Two streams of approach were followed in implementing the strategy. In the stream 1, the focus was on replacement of rams in the flock with deccani rams sourced from outside and in the stream 2, the effort was to procure deccani ram-lambs from distant areas, rearing them for one to one and half years and introduces them into the flocks<sup>3</sup>.

Direct introduction of pure Deccani breeding rams in the flocks at the age of 1.5 years, cost sharing by the rearers, insurance coverage etc were among the critical processes followed. There was also a modality of ensuring the removal of old rams once the deccani rams were introduced. To avoid the inbreeding problems, the rearers were suggested to replace the breeding ram from the flock once after two years. After discussions with the rearers and intensive market survey, rams were purchased from deccani tract areas like Nanded in Maharashtra and Bellary in Karnataka.

Table 1 provides a summary picture of all the rams sourced in Stream 1 and 2. A total of 242 rams were sourced and used to replace the existing breeding rams in the flock. Of these 57% were sourced from convergence with the mainstream program – Jeevakranti. In the district level sharing workshop with the Animal Husbandry Department in March 2009, the department, after considerable discussion, decided to promote only deccani breed rams in the three AP DAI Mandals. In addition to the 242 mentioned above, the Department provided 256 deccani rams following the same modalities. Thus, a total of 498 rams were replaced in the flocks in the three program Mandals with direct or indirect support of APDAI and WASSAN.

<sup>3</sup> A detailed description of the processes and experiences of Stream 2 i.e. Ram-Lamb Rearing as an enterprise is documented and published separately under titled 'Ram lamb rearing - A Potential Enterprise for Promoting Local Breed'.



Together these interventions have replaced more than 15% of the local rams in the three Mandals. A critical mass of rams required to make an impact in the area have been achieved<sup>4</sup>.

The mortality rate of ram-lambs in the initial phase in 2007 was high. The processes have improved over time. The major achievements of the pilot is in getting rearers agreeing to; a) invest 50% on deccani rams b) replace the existing rams in the flocks with deccani against the dominant trend of Nellore breeds.

The pilot initiative and interactions with farmers also changed the perception of the AH Department in favor of promoting deccani breed. Promotion of deccani sheep was initially seen as 'going against the tide'! Against such dominant perception, respect and interest has been generated on the deccani sheep both within the rearers and the AH Department. But the larger impacts are yet to be captured with appropriate data base and analysis.

The following are the main observations of the traditional rearers who replaced the total breeding rams in their flocks with deccani rams, in at least one season.

- ❖ Increased birth weights of lambs
- ❖ Increased weights at weaning stage – fetching them better price at sale point
- ❖ Reduced mortality of lambs
- ❖ Increased conception rates

With increase in the deccani sheep, it is envisaged that the total wool availability will also increase over time. The ram lambs are sourced with great difficulty from traditional deccani areas with low breed contamination. With the replacement of rams in the local flocks, ram-lambs will be available locally in large numbers in the course of time. Several of the flocks where complete replacement has taken place, will serve as open nucleus flocks for sourcing good ram-lambs.

Table 1: Summary details of Deccani Breeding Rams introduced in the Project Area of Mahabubnagar

Village	Total Rams	2007		2009				Total Deccani Rams Presently with Flocks	Remarks	
		Stream 1: Direct purchase of breeding rams		Stream 2: Breeding Rams reared from ram lamb units (APDAI)	Stream 1: Direct purchase of breeding rams		Stream 2: Breeding Rams reared from ram lamb units (APDAI)			
		APDAI support	Support of AH Dept. (Jeeva Kranthi)		APDAI support	Support of AH Dept. (Jeeva Kranthi)	AH Dept.			APDAI
Mushrifa	16	-	-	16	-	-	-	12	4 died/sold	
Dowlathabad	60	6	-	-	21	0	33	54	1 <sup>st</sup> phase 6 rams in daultabad died/sold.	
Suraipalli	60	-	-	-	0	60	0	60		
Bijjaram	35	-	-	-	-	-	11	24	35	
Chennaram	21	-	-	-	0	21	0	0	21	
Nandarpur	14	-	-	-	14	0	0	0	14	
Regadi-mailaram	36	-	-	-	36	0	0	0	36	
<b>Total</b>	<b>242</b>	<b>6</b>	<b>-</b>	<b>16</b>	<b>71</b>	<b>81</b>	<b>11</b>	<b>57</b>	<b>232</b>	

*In addition to the above 242 rams, Department of Animal Husbandry provided a total of 256 rams directly to the sheep rearer groups after the convergence workshop with AP DAI in March 2009. Thus, a total of 498 deccani breeding rams are introduced into the program mandals. The total number of villages where the total rams are replaced are 4: the number of villages where more than 50% rams are replaced are 17. These exercises covered sheep population of about 15,000 in the project villages.*

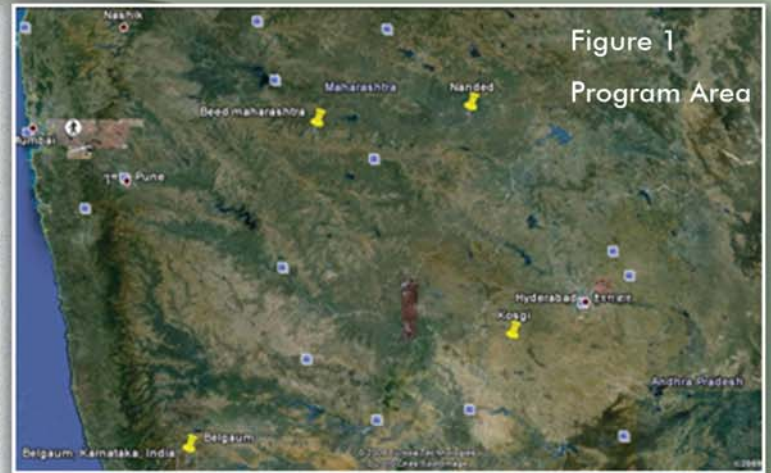
<sup>4</sup> The results will be visible over next three years. The exact data on mortality and present status of rams distributed by the AH Department is being compiled.

## Procurement of Rams and Ram-lambs

Figure 1 presents the areas from where the deccani rams and ram-lambs were sourced from. The transportation costs were subsidized from the project. The negotiation and terms of the program vary across various batches and villages. These arrangements were as below:

- ❖ In Daulatabad, 50% of the cost of the ram (total cost Rs.3500) was borne by the rearer, while 50% was borne by the project, with a condition that the rearer will return two ram-lambs after weaning to the Village Organization (VO) in lieu of the project investments.
- ❖ In Mushrifia village, the rearers agreed to return two ram lambs per each breeding ram to the VO.
- ❖ In Bijjaram, the rearer agreed to give one ram lamb per each ram after one year to the VO in lieu of the 50% project investment.
- ❖ Wherever the subsidy was provided by the Government program, it was taken as a subsidy without any repayment.

In Daulatabad the first batch of rams (2007) failed and all the 6 rams died. The reasons are not clear, but the indifference of rearers was the major factor. The discussions were not mature enough. It emphasized that intense effort was needed in the initial years to mobilize/ convince the rearers on replacing the present rams with deccani. Rearers agreeing to 50% cash contribution and repaying the rest in kind was seen as an indicator of their acceptance. The difficulties were also with regard to the perceptions of rearers on 'good breeding rams': the shape of horns, preference for aged rams were some of the constraints while selection of rams from other areas. Several times, the rearers came back empty handed after going through several markets in Maharashtra.



Sourcing the deccani rams was also very strenuous. In the first batch (2007), nine rearers spent 12 days in Mukhed and Nanded areas of Maharashtra and could get only 14 rams. Scouting for rams along with Jan Jagaran, an organization working with a federation of sheep rearers in Belgaum district of Karnataka, resulted in only 6 rams. In the year 2008, the program has tied up with the mainstream program - Jeeva Kranthi to procure 214 rams. A middleman, in contact with similar persons in Mukhed, was approached. They acted as aggregators and supplied rams on the basis of body weight – Rs.105 per kg live body weight. About 30 rearers visited the area. As a result of increasing demand from the Department (and its unit costs), during subsequent visits the middlemen hiked the rates to Rs.130 per kg body weight. As the size of the program increased, all the rearers were not able to visit these markets. But those who could go, selected rams of their choice paying the additional amount (over the unit costs), while for the others the rams were limited to unit costs. Rearers' choice was given utmost importance in the process. A veterinary doctor (either from the program or from the AH Department) always accompanied these purchasers.

Evolving a system of middlemen for procuring deccani rams helped in making rams available in larger quantities at a single point. The rams aggregated by the middlemen are mainly the rams meant for meat market.

Rearers observed that the quality of rams was better when they purchased them directly from the flocks. A regular channel is now emerging for the supply of rams. Lack of specialized system of production of rams for 'breeding purpose' becomes an inherent limitation in large scale programs of deccani breed improvement. Also, the cost of transportation and sourcing is high.

The Stream 2 was a strategic initiative evolved from the experiences of Stream 1 and particularly, to ease the constraint of availability of quality breeding rams. A total of 586 deccani ram-lambs of about 4 months age were procured from various places including Maharashtra. These are reared by women and men wage earners up to an age of one to one and half years and sold. Periodical selection of rams for breeding purpose was taken up. Some of the rams were given to the traditional rearers for replacement of rams in their flocks at a subsidy linked to the mainstream Jeeva Kranthi program, while some were subsidized by AP DAI. In total 84 breeding rams were selected from these exercises which replaced breeding rams in the flocks of traditional rearers. A Community Managed Livestock Insurance product was also developed with United India Insurance Ltd<sup>5</sup>.

The deccani breed improvement pilot taken up in AP DAI was successful mainly in building an appreciation for locally adapted breeds like deccani sheep that are more resilient to climate change. This has been established both with sheep rearers and also the Government Departments; this resulted in reorientation in the mainstream sheep development programs. However, there are several challenges that are yet to overcome, such as:

- ❖ Ensuring a system of periodical replacement of rams in the flocks to avoid inbreeding. The rearers maintaining the flocks where rams are replaced need to replace these new rams procured from outside periodically.
- ❖ Establishing the Stream 2 systems i.e. purchasing ram-lambs from open nucleus flocks and linking them to ram lamb rearers and selection of breeding rams through appropriate institutional systems.
- ❖ Following up and ensuring that all the commitments on return of ram-lambs in lieu of the project (AP DAI) investments to individual rearers are adhered to.
- ❖ Finding good markets for black deccani wool through development of various products. Reviving the usage of deccani wool and creating demand for it is important, for making farmers feel that wool is an economical product rather than a burden.

<sup>5</sup> Refer a separate publication of APDAI, titled "Ram lamb rearing - A Potential Enterprise", for description of the processes and experiences of Stream 2 i.e. ram-lamb rearing as an enterprise.

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