FOREWORD

The following report constitutes the sub-state plan for Agro Biodiversity in the Deccan. For the National Biodiversity Strategy and Action Plan. It is the product of a sustained effort by the Deccan Development Society over a period of six months. It started in August 2000 with the formation of a Local Action Committee, that mainly consisted of women and marginal farmers. It also included scientists, administrators and the more prosperous farmers from the Zaheerabad region.

A series of public hearings and consultations with stakeholders, ranging from Adivasi and Dalit Women, to Village Council Chiefs (Sarpanchas) were held over a period of five months. Foresters, scientists, medium and large farmers -- everyone participated in the process.

The process culminated in an exhilarating event called the *Mobile Biodiversity Festival*. Starting on the auspicious day of *Sankranthi*, 14 January 2001, the festival continued for a period of 35 days. A set of 10 bullock carts, specially decorated with symbols representing agricultural biodiversity and fertility, rolled from village to village covering 65 villages in all. The carts halted in each village for one day to present an exhibition displaying the wealth of local seeds, local festivals and rituals related to biodiversity, as well as a range of foods made from traditional crops. Dancers, singers and drummers energised the mood of celebration and festivity. Women and men from village after village joined the procession of carts enthusiastically, many saying they had not witnessed such an inspiring event for generations.

The core purpose of the festival was achieved by the holding of detailed, participatory discussions with hundreds of farmers in each village. By the end of 35 days,the festival had engaged in a dialogue with over 20,000 farmers, most of whom had never been consulted earlier on such issues. It was also important to ensure that the various fora were not occupied by those farmers who had had some formal schooling, or the ones who spoke the loudest or were the most powerful in the village. Therefore, special care was taken to make space for the articulation of the weak and the marginalised, women, the non-literate, dalits and adivasis. Their expertise and opinions were diligently recorded by a set of researchers, report writers, audio and video recorders.

The entire process was a result of the hard work of a team of dedicated people from DDS. Mr. Suresh Reddy, Scientist, DDS-KVK coordinated the LAC and the other consultations, while Mr Baliah and Mr Sharanappa, along with Algole Ratnamma, Humnapur Ratnamma, Swaroopamma, Santoshamamma, Saremma and Kalmela Narsamma went through the extraordinary 35 day *Mobile Biodiversity Festival.* Jagannadha Reddy and Jayappa lead the discussions with farmers during the festival and brought a focus to the issues of biodiversity.

In the production of this report, Mr Suresh Reddy was helped by a team of editors. Our special thanks go to Elise Saraceni, a visiting student from Canada who put in an enormous amount of effort in summarising village discussions and in preparing the graphs. The contribution made by Carine Pionetti, a visiting scholar from France for the chapters on *Main Actors* and *Gap Analysis* was invaluable. Two students from the School of Communications, University of Hyderabad, Smita Gopalakrishna and Vilasini helped in editing this report. Dr Ramanjaneyaloo was instrumental in going through the village reports and other meeting reports and summarised them for us. He deserves a very special thanks. Dr Raghavendra Manvi from Hyderabad edited this report and made it readable. We are grateful to him. So are we to Jayasri, Swarooparani, and Ramakrishna, who typed the report, formatted it and reworked on it several times. And to Rojamma who formatted the pictures and was responsible for printing the photo pages. Giridhar was an invaluable support all through.

The entire effort was possible through the funding assistance of Christian Aid, London and IDRC, Canada. We are very grateful to them. We are also grateful to the Ministry of Environment and Forests, Government of India, UNDP and the TPCG of the NBSAP who gave us the opportunity to take up this exercise and enlarge our vision on agro-biodiversity.

We hope this report brings alive the concerns expressed by the farmers, and gives a sense of their hopes for the future, of their culture and livelihoods. The accumulated agricultural experience and indigenous knowledge described in these conclusions, demands careful study from policy makers. We trust that this unique farming system that has nurtured agro- biodiversity in the Deccan for hundreds of years will be allowed to continue to flourish.

P.V. Satheesh
Director

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NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN

Sub-State Plan for the Zaheerabad region in the Deccan, Andhra Pradesh, South India

1 INTRODUCTION

1. (i) *Background*

The National Bio-diversity Strategy and Action Plan has been engaged in looking at, analysing, strategising and planning for the conservation and enhancement of bio-diversity in diverse fields in India. Apart from forest diversity, wildlife diversity and marine diversity, the NBSAP has included *Domesticated Diversity* as a major theme for study.

Domesticated Diversity, in common parlance, means agricultural bio-diversity (crops, livestock, poultry etc.). This is an area critical to the issue of bio-diversity, especially in the present context of globalisation of agriculture that intends to promote genetically modified monocropping as a strategy to enhance productivity in agriculture. The Green Revolution model of agriculture started in the 1960's which focussed on high response varieties of seed, high external inputs and chemicalisation of agriculture resulted in monocrops, destroying all the biodiversity in agriculture in the irrigated tracts (highly endowed soils). Some pockets of rainfed agriculture, which have not been targeted by this model of agriculture, have still sustained their biodiversity. The sustenance and enhancement of this diversity has been one of the foci of the NBSAP.

1. (ii) *Scope*

The NBSAP has initiated several research studies in agro-biodiversity, of which the Sub State Plan for Agro-biodiversity in the Zaheerabad region of the Deccan is the most important one. This study is completely driven by the grassroots communities that are directly and negatively affected by the absence of bio-diversity.

The area represented is a part of the vast region of the Deccan plateau in the South of India. But, agro-ecologically, the area covered is the Zaheerabad region in the Medak District of Andhra Pradesh, through which runs the semi-arid tract hosting some of the poorest populations of the country. It also represents the most degraded farm areas in India.

The Zaheerabad region is characterised by laterite red soils as well as alluvial black soils, and because of their character host a wide variety of agricultural crops including sorghum, a range of millets, pulses and oilseeds, all of which grow under rain-fed conditions. The diversity of this cropping system and its capacity to grow on highly infertile soils, without demanding water or external inputs,

makes it uniquely significant for the survival of ecologically sustainable agricultural systems.

As a matter of fact, the local populations call these crops *Satyam Pantalu* (**Crops of Truth**), a powerful imagery to signify the fact that these crops grow on practically no inputs at all, surviving on the available sub-soil moisture. This makes the study of this biodiversity based agriculture system so much more important.

1. (iii) *Objectives*

The main objective of the Strategy and Action Plan (SAP) was to view agricultural biodiversity from the perspectives of the local farming communities. The SAP process ensured high participation by the local communities and is completely based on people's suggestions in planning a strategy for conservation and enhancement of their agro- biodiversity.

The final plan, therefore, is mandated by the perceptions and arguments of the farmers of the region and not by the compulsions of either scientific or administrative bureaucracy.

The objective of the SAP was also to include farmers from various cross sections, focussing on women and poorer sections of the farming communities, whose livelihood security is intrinsically linked to the ecological security of agriculture in the region.

1. (iv) *Contents*

The SAP is based on the following issues that were raised in several public meetings organised by the Deccan Development Society.

- *Is the traditional cropping system based on biodiversity, which was practised until about a decade ago, beneficial to people, soil and animals in the region?*
- *If beneficial, what were the reasons that led to the gradual decline in this cropping system?*
- *Can there be solutions to these problems that lead to this decline? Is there a need for and possibility of reviving this system?*
- *If there is such a need, what roles and responsibilities are farmers willing to take on, and what role do they expect the government to perform?*

The answer to these questions fills the major part of the report. In meeting after meeting, people have evaluated the *modern* monocrops in relation to the *traditional* diverse cropping systems, and have given their verdict regarding the benefit or otherwise of these systems to the health of people, cattle and soil.

Farmers have also vividly described the threats faced by their traditional biodiversity intensive agriculture from the "modern" system of agriculture, characterised by chemical inputs and monocropping, and have come up with a

number of solutions to overcome these threats. The vision offered by them, especially the women farmers, reflects a long-term ecological perspective and a deep concern for the well-being of humans, animals and the land.

1. (v) *Methodology*

To initiate the process of the Strategy and Action Plan (SAP) in the Zaheerabad region of the Deccan area for Domesticated Diversity, a Local Advisory Committee (LAC) was constituted with people from different sections comprising:

- small, marginal and big farmers
- adivasi farmers
- scientists
- NGO representatives
- experts in the subjects of agriculture and bio-diversity
- politicians
- officers, representing agriculture, horticulture, animal and forestry departments in the government.

The LAC consisted of 30 members. Half of them (15) were farmers. And among them, seven were women. Fifteen of the 30 members belonged to scheduled castes and two to adivasi communities. [PLEASE SEE ANNEXURE 1 FOR THE LIST OF (LAC) MEMBERS]

The composition of Local Advisory Committee is as follows:

Category	Women	Men	Dalit	Adivasi	Others
Marginal farmers (0.1- 2.5acres)	3	1	3	-	-
Small farmers (2.5 - 5.0 acres)	3	1	4	-	-
Medium farmers (5.0 - 10 acres)	2	3	1	2	2
Big farmers(More than10 acres)	-	3	-	-	3
Government office	1	7	-	-	8
N.G.Os	-	3	-	-	3
Scientists	1	2	-	-	3
Politician	1	1	1	-	1
Representatives of village level institution.	2	4	1	2	3

The LAC met thrice: first in the month of August 2000, then in November 2000, and finally in April 2001. Many topics related to the National Biodiversity Strategy and Action Plan (NBSAP) processes were discussed in these meetings, and suggestions were made to prepare for the SAP for the Deccan region.

One of the first decisions of the LAC was to organise sectoral meetings of diverse groups: women farmers, adivasi farmers, scientists, NGO groups and Sarpanchs (elected chiefs of village councils) from various villages. Focus Group Discussions and tools such as the Participatory Rural Appraisal (PRA) were used to prepare the Strategy and Action Plan.

As adivasis form a sizeable proportion of the Zaheerabad region's population, and are by and large dependent on dryland agriculture for their livelihood, planning the region's agro-biodiversity was very important. Therefore, a sectoral meeting was organised with them for strategising and planning for the agro-biodiversity of the region. The meeting was organised in a cluster of *tandas* (adivasi habitats) which have a large concentration of *Lambada* adivasis.

In order to involve the political leaders and village leaders, it was also decided that a sectoral meeting with *Sarpanchs* be organised. Almost all the *sarpanchs* from 50 villages of the region, who attended this meeting are practising farmers themselves. These *sarpanchs* came from those villages where the mobile biodiversity festival was not held. The sarpanchs of villages where the Biodiversity festival was held, participated in their respective village meetings organized as part of jatara and thus contributed to the plan.

A separate meeting with the scientific community was planned specially with scientists of the Medak district, and also with those scientists of Acharya N.G. Ranga Agricultural University who had done significant work in the area of dryland agriculture. Under the leadership of the Forest Department, another sectoral meeting was held to involve the various *Vana Samrakshana Samithi*

(Forest Protection Committee) members (a majority of whom are farmers, and are living in close proximity to forests and depend upon it for their livelihoods). These were organised into groups, as part of the Joint Forest Management programme of the Forest department.

It was also decided to have a meeting exclusively with N.G.Os of the Medak district and the farmers with whom they work in different mandals of the district in similar dry land conditions. This enabled coverage of farmers in a larger area and helped in incorporating their valuable inputs into the NBSAP plan.

Thus most of the important stakeholder groups were identified and were separately consulted. A group that had promised to hold a meeting but failed to do so was middle and large farmers.

In order to hold an extensive consultation with dalits and other marginalised groups, and to amplify women's voices, a unique process was designed and executed. This process was a mobile bio-diversity festival organised by the Deccan Development Society which travelled through 62 villages of the Zaheerabad region over a period of 32 days, beginning on January 14, 2000 and concluding on February 16, 2001. [SEE BOX: MOBILE BIODIVERSITY FESTIVALS]

In each village, farmers came together to discuss relevant ideas, for preparation of the strategy and action plan for their own village. On an average, in each village, between 300-350 farmers mostly belonging to the small and marginal farming categories, participated in these discussions. In each of these village meetings, the names of the persons who attended were noted down in a register by the activists of the Deccan Development Society.By the time the Festival was over, more than 20,000 farmers from 62 villages in the region were actively involved in the preparation of the SAP.

Thus, the SAP was prepared after conducting a large number of group consultations with different stakeholders using focus group discussions, PRAs and biodiversity festivals.

MOBILE BIODIVERSITY FESTIVALS OF THE D D S

From January 14th, the day of Sankranti, the Deccan Development Society embarked upon an unique Conservation & Cultural campaign called *Mobile Biodiversity Festival.* The Mobile Festival consisted of a caravan of bullock carts specially decorated with various crop spikes and panicles and motifs of fertility, prosperity and ecological celebration. Six of these carts displayed nearly 75 varieties of traditional seeds reflecting the rich agricultural diversity of the Deccan region. Two carts exhibited recreated rural rituals pertaining to crop diversity. On two more carts were an array of cooked foods from traditional crop varieties.

The convoy of ten bullock carts split into two groups and travelled from 62 villages over a period of 32 days. In each village the caravan was received with traditional musical bands and rituals with great enthusiasm. Then they went around the village roads in a celebratory procession with people dancing, breaking coconuts and worshipping the bullocks and the carts. This was an amazing cultural energy ever seen in relation to agriculture in this region.

After the procession the carts located themselves in a central part of the village and opened their exhibitions. Thousands of villagers, men and women, thronged to see these exhibits. Considering at least 40% of the village population visited the exhibitions, a total of 50,000 women, men and children saw them. There were scenes of joy for revisiting the lost seeds, tears and cries for having lost them and a general sense of disbelief that such an astounding genetic wealth still exists amidst them.

2. PROFILE OF THE AREA

2 (i) Historical Profile

Medak was originally known as Methuku Durgam and was subsequently changed to Methuku on account of the fine rice produced in this area. Medak district first became part of the Kakatiya Kingdom followed by the Bahamani, and later the Golconda Kingdoms. Finally, with the fall of the Qutabshah dynasty, it was annexed to the Mughal Empire. During the formation of Hyderabad State by the Asif Jahis, this district was detached and included in the Nizam's Dominion. It finally became a part of Andhra Pradesh with effect from November 1, 1956 after the Re-organisation of States.*2 (ii) Location*

Medak, one of the ten districts of Telangana region of Andhra Pradesh, lies between 17^0 27'' and 18' 18" Northern latitude and 77^0 28" and 79' 10" Eastern longitude**.**

The total geographical area of the district is 9,699 Sq. km, accounting for 3.5% of the total area of the state. The district has 1265 villages and ten towns, with a population of 22,64,124 (1991 census). The district is surrounded in the North by Nizambad and Karimnagar districts, on the East by Warangal and Nalgonda districts, on the South by Ranga Reddy district and on the West by Bidar district of Karnataka state.

Medak district was not a homogeneous administrative unit in the past. Different parts of it were, at various periods of time, under the control of several different dynasties: the Mauryas (ca.320 A.D), the Satavahanas (5^{th} Century A.D), the Chalukyas Kalyani (ca 975-1138 A.D), the Kakatiyas (ca 1123-1323 A.D), the Bahamanis (1325-1540 A.D), the Barid Shahis and Qutub Shahis (1540-1650 A.D), the Moghuls (1650-1724 A.D) and the Asaf -Jahis (Nizams of Hyderabad, (1724-1948 A.D).

In 1901, Medak district consisted of six taluks, viz., Medak, Ramayampet, Baghat, Kalabgur, Andole and Tekmal besides some Jagirs. In 1905, Tekmal was merged with Andole, and Ramayampet was parcelled out to Medak and to Kamareddy taluk of Nizambad district. In the same year the district gained the taluk of Ibrahimpatnam from Mahaboobnagar district, and Siddipet taluk from Karimnagar district. However, Ibrahimpatnam taluk was later added to Baghat.

Thus in 1905, the district comprised five taluks, viz., Medak, Siddipet, Baghat, Kalabgur (Sangareddy) and Andole. During the second decade of this century, Vikarabad taluk was newly constituted by merging Hatnura and Daulthabad Jagirs. In 1931, Baghat was constituted into a separate district. During the same decade the district gained the taluk of Yellareddy from Nizambad district and in the next decade (1941-1950) the Sarf-e-Khas district of Atraf-I-Balda and the district of Baghat were abolished and the new district of Hyderabad was created (1948).

Consequent to the abolition of Jagirs in 1950, the Paighas of Narsapur and Gajwel were converted into taluks and added to Medak district with headquarters at Narsapur and Gajwel respectively. Subsequently owing to the reorganisation of states in 1956, the district gained the taluk of Narayankhed and Zaheerabad (except Nirna Circle and Nyalkal Circle from Bidar district). The district however lost the taluk of Vikarabad which was transferred to Hyderabad.

2 (iii) *Geographical Profile* (*Source :Hand book of Mandal Statistics, Medak district*)

Medak district forms part of the tableland of the Deccan Plateau, and is crossed by different ranges of hills. The land is made up of plains, gentle slopes and undulating hills. Isolated peaks and rocky clusters lie scattered all over the district. The elevation of the ground in the district is between 500 m – 600 m with occasional hills up to 638 m above Mean Sea Level.

The hills that are of considerable size in the forest division are in a state of erosion because of reckless felling and indiscriminate grazing.

Geology

The rock formation in the district is of the oldest type *(Archaen gneisses)* and consists principally of Peninsular granite complex, i.e. pink and grey granites and their metamorphic variations. Minor inliers of Dharwar rocks occur as narrow bands in the granite, and consist of home blend schists, chlorite schists, and banded or massive ferruginous quartzites.

A few such exposures are seen due North and North-East of Siddipet. A part of the Sangareddy taluk in the South-West of the district is covered by the Deccan traps (Basalt flows) formation.

MINERAL RESOURCES

- Building Material

The granites found in the district yield large quantities of building stone and road-metal.

- Quartz

There are numerous quartz veins cutting across the granite all over the district. Quartz useful for the glass industry may be obtained from selected deposits.

- Clay

In the granites feldspars are colonised in some places giving rise to small deposits of white clay in the form of veins and pockets.

- Soils

The soils of the district are mainly red earths comprising loamy sands, sandy loams and sandy clay loams. Red laterite soil is predominant in Zaheerabad taluk. Black cotton soils comprising of clay loams, clays and silty clays are found in Sangareddy, Andole, Narayankhed, and Narsapur taluks.

The red soils are generally non-saline and non-alkaline while the black soils are moderately alkaline with a highly soluble salt content.

- Rivers

The district does not have a main river. The Manjira, a tributary of the Godavari, is the only important river. Manjira rises in Bidar district of Karnataka State, and enters Medak district in the South-East. It flows for about 96 km in the Western and North-Western taluks of Narayankhed, Zaheerabad, Sangareddy, Narsapur and Medak. The river touches the district headquarter town of Sangareddy, takes a 'U' turn and joins the Godavari in the adjoining Nizamabad district, making a journey of about 100 Kms in the district. There are three projects constructed across the river. The oldest project is the Manjira barrage near Sangareddy. It has been constructed mainly to store water for the drinking water needs of Hyderabad city.

Recently, another reservoir called the *Singnoor project*, 30 Kms upstream of the Manjira barrage, has been completed. The water stored is being used to meet the drinking water needs of Hyderabad and adjoining areas.

The other important streams in the District are the Haldi *or* Pasupuyeru *and the* Kudlair. Haldi *is a tributary of the* Manjira *and enters the district from the North and flows through Medak town. The* Kudlair, *which drains Siddipet taluk, is another river in the district and forms a tributary of* Mahair.

- Irrigation Sources

The chief sources of irrigation in the district are the Ghanpur Ayacut, the Rayanpalle project, the Gangakathwa project, the Beglempalli (Bogulapalle) project, and the Peddavagu project. The undulating character of the terrain of the district, lends itself favourably to irrigation from canals, tanks, wells, and streams. The Net irrigated area in the district is 1,27,617 hectares, of which canal irrigation accounts for only 3.3 percent; the remaining irrigation is through open wells and bore wells.

- Climate

The climate of the district is characterised by a hot summer and generally dry weather, with some pleasing showers, expected during the south-west monsoon season. The year may be divided into three seasons, viz., Winter season (November-February), Summer season (March-May) and South-West monsoon season (June-October).

- Rainfall

The rainfall during the South-West monsoon months amounts to about 84% of the annual rainfall. July is the rainiest month. The average annual rainfall in the district is 896.7 mm. The heaviest rainfall in 24 hours recorded at any station in the district was 307.3 mm at Sangareddy in September, 1908.

The rainfall in the district increases from the South towards North. The normal monthly average rainfall in the District is given in Table 2.

Table 2: Monthly Average Rainfall in the District

Seasons	***Months***	***Rainfall (in mm)***
South-West monsoon	June	147.1
	July	227.4
	August	191.5
	September	188.2

	October	48.5
	November	18.5
Winter	December	5.2
	January	3.1
	February	13.9
	March	11.6
Summer	April	22.5
	May	19.2
Total		**896.7**

Source : Chief Planning Officer, Medak district.

- Temperature

May is the hottest month with the mean daily maximum temperature of about 40^0 C. With the onset of the South-West monsoon in the middle of June, temperature decreases appreciably and the weather becomes more pleasant.

December is the coldest month with a mean daily maximum temperature of about 29^0 C and a mean daily minimum temperature of about 14^0 C. During the cold season, the night temperature may some times go down to about 6^0 C.

2.(iv) *Ecological Profile*

FORESTS AND VEGETATION

The vegetation of the district can be categorised into forest, non-forest, and aquatic types.

Forest Vegetation

The district forests are of Southern Tropical Dry deciduous type (Champion & Seth, 1968), and account for 9.9% of the total geographical area. The forests are grouped into only one division i.e. Medak, which includes 6 ranges.

The details of the forest ranges are given in Table 3.

The forests are further classified into Dry mixed deciduous type, Dry deciduous type and Dry savannah type. Locally, the forests are subclassified by the forest officials as teak type (Teak over 40%), mixed teak type (Teak 10% to 30%), and mixed type (Teak less than 10%), depending on the abundance of teak in the forests.

Table 3: Forest Ranges of Medak District

SL. No.	Name of the Division	Name of the Range	Area (in Sq. Kms)
1.	Medak	Siddipet	178.99
2.	Medak	Ramayampet	165.27
3.	Medak	Medak	250.47
4.	Medak	Narsapur	202.70
5.	Medak	Zaheerabad	91.12
6.	Medak	Narayankhed	71.54

(Source: Flora of Medak district - T.Pullaiah,C.Prabhakar,B.Raviprasad Rao)

- Dry mixed deciduous forests

This type of forest is widespread throughout the district and is distributed in the forest blocks of Medak and Narsapur taluks.

The top storey stratum consists of species like *Albizia amara, Anogeissus latifolia, Bombax ceiba, Boswellia serrata, Buchanania latifolia, Chloroxylon swietenia, Dalbergia paniculata, Disospyros melanoxylon.*

Givotia moluccania, Hardwickia binata, Lagerstroemia parviflora, Lannea coromandelica, Madhuca indica, Mitragyna parvifolia, Morinda pubescens, Ougeinia oojeinesis, Phyllanthus emblica, Soymida febrifuga, Strychnos nux-vomica, Tectona grandis, Terminalia bellirica, T. coriacea etc. Terminalia arjuna is common along the banks of streams.

The under storey consists of *Butea monosperma, Cassia fistula, Cassine glauca, Cordia obliqua, Dendrocalamus strictus, Gardenia gummifera, G. latifolia, Holarrhena pubescens, Limonia acidissima, Nyctanthus arbor-trists, Wrightia tinctoria etc.*

- Shrubs

The common shrubs in these forests are *Alangium salvifolium, Annona squamosa, Cassia auriculata, Catunaregam spinosa, Combretum albidum, Dichrostachys cinerea, Dodonaea angustifolia, Grewia hirsuta, G. tiliifolia, Helicteres isora, Maytenus emarginata, Rhus mysorensis, Vitex negundo and Ziziphus spp.*

- Climbers

The climbers that are to be seen within the forests are: *Abrus precatorius, Ampelocissus latifolia, Aspidopterys cordata, Butea siperba, Capparis zeylanica, Cissampelos pareira, Cocculus hirsutus, Cryptolepis buchanani, Jasminum auriculatum, Olax scandens, Paracalyx scariousus, Rivea hypocrateriformis, Ziziphus oenoplia etc.*

- Herbs

The common herbs that are encountered in these forests are: *Acalypha indica, Aeroa lanata, Ageratum conyzoides, Alysicarpus spp. Biophytum sensitivum, Cassia tora, Crotalaria verrucosa, C. retusa, Curculigo orchioides, Desmodium dichotomum, D.gangeticum, Euphorbia cristata, Glinus oppositifolius, Hemigraphis latebrosa, Hibiscus lobatus, Indigofera linnaei, I.trita, Polycarpaea corymbosa, Polygala elongata, Pulicaria wightiana, Triumfetta rhomboidea, Uraria picta, and Zornia gibbosa, etc.*

- Grasses

The common grasses in these forests are: *Apluda mutica, Aristida adscensionis, A setacea, Cymbopogon coloratus, C. martinili, Dichanthium annulatum, Eragrostis uniolodies, Heteropogon contortus, Oplismenus burmannili, O. compositus etc.*

- Parasites

The parasitic species present in the district are: *Cassytha filiformis, Cuscuta reflexa, Dendrophthoe falcata, Scurrula parasitica, Striga asiatica, Visum nepalense* etc.

- Pteridophytes

Vascular cryptogams are few, and usually occur near streams and in rock crevices in forests. *Actinopteris radiata* is common in rock crevices. *Marselia quadrifolia* is seen in ponds and ditches.

- Dry Deciduous Scrub Forests

Scrub forests are mostly distributed in the forest blocks of Siddipet, Zaheerabad and Narayankhed ranges. Scrub vegetation is characterised by the predominance of: *Annona squamose, Capparis zeylanica, Cassia auriculata, C. occidentails, Diospyros melanoxylon, Gymnosporia spinosa, Dodonaea angustifalia, lxora parviflora, Lantana camara with trees of Phoenix loureiri*.

- Dry Savannah Forests

These types of forests are distributed in patches in the outer edges of the forest blocks, and are usually found in Siddipet, Narayankhed, and Zaheerabad ranges, and in parts of Ramayampet and Narsapur. The trees stand far apart, singly or in small groups in more or less heavy grass in which certain fire resistant plants persist. Stemless *Phoenix, Phoenix loureiri* is characteristic. Other common species encountered in these forests include: *Cassia auriculata, Dodonea angustifalia and Lantana camara*.

Non Forest Vegetation

- Waste Lands and Road Sides

The vegetation of waste lands and road sides includes: *Acalypha ciliata, Acanthospermum hispidum, Achyranthes aspera, Amaranthus tricolor, Boerhavia diffusa, Calotropis gigantea, C. procera, Cassia auriculata, C. occidentalis, C. tora, Cleome tynandra, Corchorus aestuans, C. fascicularis, C. trilocularis, Croton bonplandiamum, Datura innoxia, Echinops echinatus, Euphorbia hirta, E. indica, Evolvulus alsinoides, Impatients balsamina, Indigofera cordifolia, Jatropha gossypifolia, Parthenium hysterophorus, Prosopis chilensis, Solanum surattense, Sida cordata, Tephrosia purpurea, T. villosa, Tridax procumbens, Vernonia cinerea, and Vicoa indica*, etc.

Avenue trees like *Azadirachta indica, Cassia roxburghil, Delonix regia, Ficus benghalensis, Mangifera indica, Pongamia pinnata, Tamarindus indica*, grow in towns and villages, and along the sides of roads in the district.

- Hedges

The common hedge plants are *Abutilon indicum, Caesalpinia bonduc, Cascabela thevetia, Catunaregam spinosa, Clerodendrum inerme, Grewia hirsuta, Lawsonia inermis, Parkinsonia aculeata, Prosopis chilensis* etc. Chief climbers seen in hedges are *Cissampelos pareira, Cocculus hirsutus, Derris scandens, Pergularia daemia, Tinospora cordifolia, Tylophora indica*, etc.

- Weeds/Uncultivated foods

The Common weeds/Uncultivated foods of dry and cultivated fields, and dry irrigated fields are: *Abelmoschus ficulneus, Acanthospermum indicum, Acalypha indica, Ageratum conyzoides, Alysicarpus rugosus, Amaranthus spinosus, A. viridis, Amischophacelus axillaris, Argemone mexicana, Celosia argentea, Cleome gynandra, Chenopodium album, Corchorus aesuans, C. fiascicularis, C. trilocularis, Crotalaria laburnifolia, C.retusa, Cynodon dactylon, Cyperus rotundus, Desmodium triflorum, Digera muricata, Eragrotis atrovirens, E. viscosa, Euphorbia geniculata, E. hirta, E. indica, Justicia spp., Lagascea mollis, Leucas aspera, Melilotus indica, Merremia emarginata, Panicum repens, Partehium hysterophorus, Phylanthus amarus, Physalia minima, Portulaca oleracea, Rorippa indica, Sphaeranthus indica, and Trianthema portulacastrum* etc.

- Aquatic Vegetation

The aquatic plants can be classified under the following categories depending on their relations with soil, water and air.

FLOATING HYDROPHYTES

- Free Floating

These plants have no contact with soil. They float on the surface of the water and are in contact with air and water only.
e.g., *Pistia stratiotes, Spirodela polyrhiza, Utricularia stellaris*.

- Attached with Floating shoots

These plants are attached to the muddy floor by their roots but their shoots come up and float on the surface of water.
e.g.: *Ipomoea aquatica, Ludwigia adscendens*.

- Attached with Floating leaves

These plants are attached to the muddy floor. Their stems remain under water in contact with soil and water, while leaves float on the surface of water.
e.g.: *Aponogeton natans, Nymphaea nouchali, Nymphoides hydrophylla*.

SUBMERGED HYDROPHYTES

- Suspended submerged

These plants remain in water, but have no contact with soil and air.
e.g.: *Hydrilla verticilata, Nechamandra alternifolia*.

- Attached submerged

These plants remain in water but are rooted in the soil.
e.g.: *Ottelia alismoides, Potamogeton nodusus, Monochoria vaginalis*.

- Emergent Hydrophytes

These plants are attached to the soil and are covered with water at their base, but most of their vegetative parts come out of the water surface.
e.g.: *Aeschynomene aspera, A. indica, Ammannia baccifera, A. multiflora, Bacopa monnieri, Bergia ammannioides, Cyperus nutans, Echinochioa Marselia quadrifolia, Polygonum barbatum, P. glabrum, Rotala spp., Scrirpus articulatus, Sopubia delphinifolia and Typha angustata*.

- Wetland Hydrophytes

These plants are rooted in the soil saturated with water, but also survive in dry conditions in the later part of their life cycle.
e.g.: *Ageratum conyzoides, Bacopa monnieri, Bergia ammannioides, Caesulia axillaris, Centella asiatica, Commelina spp., Cyperus spp., Dopatrium junceum, Eclipta prostrata, Fimbristylis spp., Hemiadelphis polysperma, Hoppea dichotoma, Hygrophila aurciculata, Ipomoea carnea, Lobelia alsinodes, Lindernia spp., Ludwigia perennis, Panicum trypheron, phyla nodiflora, Sopubia delphinifolia*.

In Zaheerabad area, the forest blocks are vast stretches of treeless tracts subjected to heavy soil erosion. The rural poor depend on these degraded forests for fuel wood and fodder. The red lateritic soils respond well to plantation done after deep ploughing.

AGRO-ECOLOGICAL ZONE

Andhra Pradesh has been delineated into seven agro-climatic zones (an agro-climatic zone refers to the land units in terms of major climates suitable for a certain range of crops and cultivars) by the ICAR to strengthen agricultural research through its various projects.

For the present the seven agro-ecological zones characterised by the National Bureau of soil survey and land use planning are as follows:

- Agro-eco-Zone

I. Deccan plateau : hot, arid eco-zone with mixed red and black soil.
II. Deccan plateau : hot semi-arid eco-zone with shallow to medium black soils.
III. Eastern ghats : hot, semi-arid eco-zone with red loamy soils.
IV. Deccan plateau: hot semi-arid eco-zone with mixed red and black soils.
V. Eastern coastal plain: hot, semi-arid eco-zone with coastal and deltaic alluvium derived soils.
VI. Eastern coastal plain: hot, dry, sub humid eco-zone with coastal and deltaic alluvium soils.
VII. Eastern ghats: hot moist, sub-humid eco-zone with lateritic soils.

The district of Medak falls under zone III and IV which are characterised by hot and dry summers and very mild winters. The mean annual rainfall ranging between 700 mm to 1000 mm covers 42-60% of mean annual evapo-transpiration potential of 1000-2400 mm. The moisture availability period ranges between 120 to 150 days.

- Cropping systems of Zaheerabad region

Zaheerabad region of the Deccan area still hosts enormous agricultural diversity in spite of the total extinction of a few varieties(Traditional varieties of sugarcane like *Manchi cheruku, Tella cheruku, Gomari cheruku and Nalla cheruku,* Ground nut varieties like *Pedda baimugh*, Foxtail millet varieties like *Manchu korra* and Redgram varieies like *Tella thogari*) and threat to several crops and varieties especially those belonging to pulses and millets.

On an average, each acre of farm expressly those belonging to small and marginal farmers, hosts 8-10 varieties of various crops. Even today, there are women farmers like Manemma of Gangwar village, Permangari Narsamma of Metlakunta village, Anjamma of Gangwar village, Ramulamma of Shamshuddinpur village who cultivate nearly 20 - 30 varieties of crops in an area of 1-2 acres each. The reasons for this huge diversity in their farms as explained by them are as below.

- Provides diverse and nutritive food to the family members at different stages of a season and also throughout the year.
- Provides different kinds of fodder and feed to the live-stock.
- Improves the soil fertility.
- Results in effective utilisation of farmland.
- To make sure that under no conditions of unfavourable environment and climate , the whole crop is lost.

Different farmers follow different cropping systems depending upon their situation. They can be classified into *high diversity* farms, *medium diversity* farms and *low diversity* farms. The following cropping systems (except in one system where only crops have been mentioned but not varieties) are prevailing in red and black soils in Kharif and Rabi season and gives us an idea about the amount of agrobiodiversity in the region.

- *Red soils: Kharif rainfed*

High diversity farms

1. Redgram(4 varieties: *Erra thogari,Tella thogari,Nalla thogari and Burka thogari*) + Jowar (5 varieties: *Gundu jonna,Thoka jonna,Tella mallejonna,Garib jonna and Erra Jonna*) + Field Bean (3 varieties: *Tella Anumulu,Erra Anumulu and Nalla Anummulu*) + Cow pea (2 varieties :*Tella Bebbarlu and Erra bebbarlu*) + Hibiscus(3 varieties: *Erra pundi, Nalla pundi and Tella pundi*) + Green Gram (4 varieties: *Kidki Pesari, Theega Pesari,Baandari Pesari and Manchi Pesari*) + Black gram (3 varieties :*Manchi minumu,Sarkar minumu and Nunupu minumu*) + Bajra + Sesamum + Niger + Foxtail millet (3 varieties: *Tella Korra,Erra korra and Nalla korra*) + Finger millet + Kodo millet + Horse gram.
2. Jowar + Bajra + Red gram+ Hibiscus + Field bean + Cow pea + Green gram + Black gram.
3. Green gram + Jowar + Field bean + Cow pea + Hibiscus
4. Ground nut + Jowar + Field bean + Cow pea + Gingelly + Hibiscus.

Medium diversity farms

5. Jowar + Bajra + Hibiscus.

6. Gingelly + Jowar + Red gram
7. Dry land paddy + Finger millet

Low diversity farms:

8. Niger

9. Bishop's weed (Voma)
10. Sun Hemp
11 Horse gram

- *Black soils - Kharif rainfed*

High diversity farms:

1. Redgram (4 varieties: *Erra thogari,Tella thogari,Nalla thogari and Burka thogari*) + Jowar (5 varieties: Gundu jonna,Thoka jonna, Tella mallejonna, Garib jonna and Erra jonna) + Field Bean (3 varieties : Tella Anumulu,Erra Anumulu and Nalla Anummulu) + Cow pea (2 varieties :Tella Bebbarlu and Erra bebbarlu) + Hibiscus (3 varieties: Erra pundi ,Nalla pundi and Tella pundi) + Green Gram (4 varieties: Kidki Pesari ,Theega Pesari,Baandari Pesari and Manchi Pesari) + Black gram (3varieties: Manchi minumu,Sarkar and Nunupu minumu) + Bajra + Sesamum + Foxtail millet (3 varieties: Tella Korra,Erra korra and Nalla korra) + Finger millet + Kodo millet + Horse gram.

Medium diversity farms

2. Red gram + Jowar + Field bean + Cow pea + Black gram
3. Red gram + Jowar + Field bean + Cow pea + Hibiscus + Green gram

Low diversity farms:

4. Black gram + Manchi Pesalu + Gingelly + Hibiscus.
5. Green Gram + Saijonna (for fodder only)
6. Sunflower.

- *Rabi - Red Soils*

Medium diversity farms

1. Rabi Jowar + Safflower
2. Rabi Jowar + Horse gram

- *Rabi - Black soils*

High diversity farms

1. Rabi jowar (4 varieties : Sai jonna,Tella malle jonna,Erra jonna and Pyalala jonna) + Chick pea (3 Varieties: Tella chanige,Nalla chanige and Erra chanige) + Wheat (2 varities: Budda Godhumalu and Katte Godhumalu)+ Safflower + Mustard + Linseed + Lathyrus + Lentils + Peas (3 varieties: Nalla

battagalu,Tella battagalu and Yerra battagalu)+ Oats + Hibiscus + Cucumber creeper.
2. Chick pea + Safflower + Lentils + Lathyrus + Peas + Linseed + Mustard.

Medium diversity farms

3. Jowar + Chick pea + Safflower.
4. Chick pea + Safflower.

Low diversity farms

5. Safflower.
6. Coriander.

- *Irrigated Condition*

High diversity farms

1. Sugarcane + Maize + Field bean + Hibiscus + Castor + Cluster bean + Portulaca oleracea + Sesbania
2. Turmeric + Castor + Brinjal + Tomato + Cluster bean + Hibiscus + Anise.

Medium diversity farms

3. Ginger + Chillies + Castor
4. Garlic + Coriander

Low diversity farms

5. Paddy
6. Potato
7. Onion
8. Sun hemp

- Live stock

Next in importance to crop agriculture is the livestock wealth in the district. It consisted of animals used for production of milk and draught power in agriculture. According to 1993-94 census, the total live stock population included 5.12 lakh cattle,1.15 lakh buffaloes, 2.38 lakh sheep, 2.37 lakh goats and 0.35 lakh other.

The cattle population has decreased in number from 5,95,163 in 1987 to 5,12,700 in 1993-94. The unpublished live stock census data for the current period further confirms this reduction in cattle population. The notable thing here is that the active working of two meat processing factories, which farmers say, played a significant role in the decline of region's cattle population, started functioning actively since late 1980's. This strongly supports the farmers' argument for the ban of

these two major meat processing factories in the district, if one wants to prevent a further decline in cattle population. The decline directly affects the various agricultural processes and the availability of Farm Yard Manure whose scarcity is reducing the cultivation of traditional crops (since they respond well to farm yard manure and are not fertiliser responsive) as well as affecting the soil fertility by depleting soil nutrients and organic matter content, lowering the overall soil productivity.

2.(v) Socio Economic Profile

Medak has a total population of 22,69,800 persons of whom 11,17,720 are female constituting a percentage of 49.24. Of this population, 19,41,310 live in rural areas, constituting a hefty 85.52%. The district registered a population growth rate of 2.56, bringing a population density of 234 persons/sq.km. The literacy is much below the national average and stands at 32.41. There is a huge gap between male and female literacy. While the male literacy is 45.15%, female literacy is only 19.25.

Dalits form 17.5 % of the population in the district and scheduled tribes are 4% of the population. In the Zaheerabad region where the NBSAP was taken up, the Scheduled castes form nearly 20% of the population and STs 2.75%.

Medak has a huge work force which stands at 47.78 %, almost half the population. Of this, 78% are agricultural workers, making agro diversity a major livelihood issue. The irrigated area as percentage of cropped area is less than 30%. Of this canal irrigation is a miniscule 3%. The only river that flows through the district is dammed to supply drinking water to Hyderabad, depriving the local people of the benefit of irrigation. In spite of all these handicaps, and the predominance of rainfed agriculture and semi arid environment, the district produces 160 kg per capita food grains, which is a testimony to the strength of the farming systems practised by the farmers.

2.(vi) Political Profile

The district comprised eight taluks in 1971 and these were reconstituted into 11 taluks in 1981. On 25-5-1985, these taluks were further reconstituted by the State Government into 45 Revenue Mandals under three Revenue Divisions, viz., Sangareddy, Medak, and Siddipet.

The Government reconstituted the 11 *Panchayat Samithies* into 45 Mandal Praja Parishads on 15-1-1987.

Table 4: Revenue Divisions with their Respective Mandals

Name of the Division	***Name of Mandals***
1. Sangareddy	1 Jharasangam 2 Kalher 3 Kangti 4 Kohir

	5 Kondapur	6 Manoor	7 Munipally	8 Narayankhed	
	9 Nyalkal	10 Patancheru	11 Raikode		
	12 Ramachandrapuram	13 Sadasivpet	14 Sangareddy		
	15 Zaheerabad				
2. Medak	16 Andole	17 Alladurg,	18 Chegunta	19 Hathnura	
	20 Jinnaram	21 Kowdipally	22 Kulcharam	23 Medak	
	24 Narsapur	25 Regode		26 Shankarampet (A)	
	27 Sankarampet (B)	28 Shivampet	29 Tekmal	30 Yeldurthi	
3. Siddipet	31 Chinnakodur	32 Doulthabad	33 Dubbak	34 Gajwel	
	35 Jagadevpur	36 Kondapak	37 Nangnoor	38 Mirdoddi	
	39 Mulug	40 Siddipet	41 Toopran	42 Warangal	

Source : Hand book of Mandal statistics,Medak district.

3. CURRENT (KNOWN) RANGE AND STATUS OF BIO-DIVERSITY

There are three main statements made by villagers throughout the Jatra meetings, and these can be interpreted as the villagers' perceptions about traditional crops. They include:

- Traditional crops are good for health (raw score 79)
- Traditional crops enhance soil fertility (raw score 29)
- Traditional crops are good for cattle (raw score 4)

Graph 5 includes *only* those comments that pertain to the "Perceptions" category (3 of 40 total comments made by the villagers).

Please see Graph 1

(i) State of natural ecosystems and plant/animal species (*See section 2 (iv) for ecological profile of area*).

(ii) State of agricultural ecosystems and domesticated plant/animal species and varieties

This region is endowed with a variety of land types; these are associated with a large variety of cultivated crops, grown either in kharif or in rabi. Cattle plays a major role in agriculture, and the use of cow manure, where it prevails, is seen by farmers as a major asset in the preservation of soil fertility.

Several local breeds of bullocks, goats, sheep, and poultry are found on the Deccan Plateau. Amongst popular local breeds are the *Deoni* breed of cattle, the *Osmanabadi* goat, and the *Aseel* chicken.

Kharif crops include: sorghum (*seven varieties*), pearl millet (*two* varieties), finger millet, little millet (*three* varieties), foxtail millet (*four* varieties), kodo millet, redgram (*four* varieties), horsegram, greengram (*eleven* varieties), blackgram, drysown paddy, field bean, cowpea, sunflower, and mesta, along with a range of vegetable crops such as spinach, ridgegourd, bottlegourd, bittergourd, brinjal, tomatoes and French bean.

The water retention capacity of most soils in the region is low, except for black cotton soils, which are usually located in the low lying areas, and which are characterised by a higher fertility level. Rabi crops grown on black soils include wheat, dry sown paddy, linseed, chickpea, field pea, lentils, lathyrus, coriander, and groundnut.

It is noteworthy that these comparatively better lands, tend to be owned or tilled by upper caste farmers, while the Dalit farmers are usually confined to the uplands of red soil. Moreover, farmers in the region associate red soils and crops grown on these soils with feminine attributes, while black soils are associated with masculine attributes.

This is due to the fact that commercial crops such as sugarcane, cotton, chillies, ginger, turmeric, and potatoes are only grown on black cotton soil.

Here is a brief description of the soil types and of the crops that are traditionally grown on these soils:

- Red soil: It is further divided into shallow soils, mixed soils featuring a good capacity for water retention, deep sandy soils on which the following crops can be grown: sorghum (*Sorghum vulgare*), pearl millet (*Penisettum typhoideum*), little millet (*Panicum miliare*), sesame (*Sesamum indicum*), niger (*Guizotia abyssinica*), mesta (*Hibiscus cannabinus*), greengram (*Vigna radiata*), redgram (*Cajanus cajan*), and field bean (*Dolichus lablab*).

- Black soil: The farmers sow a wide range of kharif and rabi crops, including rabi sorghum, wheat (*Triticum vulgare)*, sesame, greengram, safflower (*Carthamus tinctorius*), linseed (*Linum usitassimum***), c**hickpea (*Cicer arietinum***),** field pea (*Pisum sativum*), little millet, finger millet (*Eleusine coracana*), foxtail millet (*Setaria italica*), groundnut (*Arachis hypogea*), and dry sown paddy (*Oryza sativa*).

- Mixed soil: All traditional kharif crops are grown as well as certain rabi crops, such as sunflower, chillies or castor.

- Sodic soil: Certain varieties of little millet and foxtail millet can be grown, along with horsegram and coriander (*Coriandrum sativum*).

- Submersible muddy soils: This soil type is best suited for dry sown paddy during kharif, and chickpea and lentils during rabi, if the water level has subsided.

- Rocky soil: On this soil, only a few crops like sorghum, pearl millet, and redgram can be grown.

Of these crops, many were identified by farmers as being on the decline, if not on the brink of extinction. Minor millets such as foxtail millet and finger millet have been fast disappearing from farmers' fields. *Manchu korra,* a foxtail millet variety that lives off dew, is no longer to be found in most villages.

Similarly, the white variety of redgram, which has a particular medicinal value, has been displaced by newly introduced varieties of seeds in certain areas of Medak District.

The area under rabi jowar, out of which a particularly tasty roti is prepared has drastically decreased. This process is largely linked to the irrigation of black soils, and their subsequent conversion to cash crops such as turmeric, potato and sugarcane.

4. STATEMENT OF PROBLEMS RELATING TO BIODIVERSITY

The report writers have tried not to state any problems relating to biodiversity from their own perspective. As was said earlier, this report is mainly composed of the perspectives of the local communities. Hence, the problems stated in this section come from the people themselves. Apart from the public hearings conducted with farmers per se, some stakeholders have also been consulted in open meetings. Most of these groups belong directly or indirectly to farming communities. The two groups that had a distinctly different identity were agricultural scientists and NGO activists. Therefore the *Statement of Problems* is divided into two sections. The first section is related to the problems spelt out in the *Mobile Festival* by farmers ; and the second to the views expresssed by scientists and other activists at different meetings.

4.(i) Concerns voiced in Mobile Biodiversity Festival

Two primary graphs [Graph 1(A) and Graph 1(B)], and four supplemental graph(s) [Graph(s) 2, 3, 4, and 5] included in this report, organise the problems delineated by people into appropriate categories for easy reference. These issues and suggestions, were raised by villagers, primarily farmers, at the *Jathara* meetings, (an integral component of the Mobile Bio-Diversity Festival). Their comments have been categorised into four main headings:

1) *Demands*
2) *Constraints*
3) *Threats*
4) *Perceptions*

At each of the 62 *Jathara* meetings, an audio tape- recording was made to ensure that all comments were accurately included as part of the individual village reports *and* as part of this quantitative/qualitative analysis. These taped discussions were transcribed and became the basis for pinpointing the issues.

Thus, the issues and suggestions highlighted are based solely on the discussions of the villagers themselves, and are represented here in relation to the number of times a particular comment has been repeated during the one-month course of the meetings. *All* comments have been included in this count, regardless of whether the frequency of the comment itself was high or low.

The "Y" axis of each of the graphs does NOT represent a percentage, but represents an actual RAW SCORE. These scores are equivalent to the number of times a given topic has been raised during the course of the Mobile Biodiversity Festival Jathara meetings (nearly 1,200 scores).

Please see GRAPH 1(A)

Graph 1(A) includes comments from all four categories (Demands, Constraints, Threats and Perceptions), arranged in descending order of the raw scores. The bars represent a total of 40 varying comments that were raised in the 50 villages included in this analysis.

GRAPH 1(B) : Quantitative analysis

Graph 1(B) is a manipulation of Graph 1(A) ,representing the villagers' comments both in a categorical and descending order. Graph 1(B) includes all 40 of the comments displayed in Graph 1(A), but has been grouped with the latter so that a visual comparison can be made.

GRAPH 3: Quantitative analysis-Constraints

Graph 3 includes *only* those comments that pertain to the "Constraints" category (13 out of 40 total comments made by the villagers).

A closer look at Graph 3 reveals that villagers feel one of the biggest constraints impeding the cultivation of traditional crops is the need for, and shortage of cattle (second tallest bar – raw score 70).

Without cattle, the revitalisation of the traditional agricultural practices and/or crops is practically impossible. Farmers interested in cultivating traditional crops and adopting the necessary traditional agricultural practices, find they are immediately confronted with this dilemma. Without cattle, farmers cannot obtain the necessary farmyard manure (FYM) needed to fertilise the land.

Shortage of farmyard manure is a serious obstacle for most farmers. This concern was the single most commonly repeated comment by the villagers (raw score 87).

The main reasons perceived to be responsible for reduction in cattle population are:

- Farm mechanisation, which has extensively replaced bullocks with tractors and power tillers, to carry out most of the agricultural operations. Added to this were problems like reduction in the availability of fodder, reduction in the area of public grazing lands, and the non-availability of labourers to graze the cattle. *The Government has also discontinued cattle loans and has diverted these for farm mechanisation.*

- Of late, a few mechanical slaughterhouses have started functioning in the area. These export beef to foreign countries. The slaughterhouses are paying a premium price for cattle. This is not only luring the farmers, (who are already facing difficulties in maintenance), into selling their cattle, but also has raised the cattle prices in the area. Another fallout of these slaughterhouses is the increase in cattle thefts.

The reduction of cattle population has wider implications:

a. It has reduced the availability of farmyard manure (FYM) for the crops, and has increased the dependency on chemical fertilisers, which has led to erosion of soil fertility, and damage to soil structure. The scarcity of FYM is attracting some farmers to sell whatever little FYM they have and to purchase chemical fertilisers instead. The FYM attracts good price, and chemical fertilisers are available on credit.

b. This has hampered crucial practices like land preparation and other intercultural operations. This, coupled with the non-availability of FYM,has led to reduction in yield of field crops.

c. The reduction of cattle population has also minimised the availability of milk, curd and other products, which greatly influenced human health earlier.

Refer to graph 3 to see more "Constraints" expressed by the villagers.

GRAPH 4: Quantitative analysis - Threats

Graph 4 includes *only* those comments that pertain to the "Threats" category (5 of 40 total comments made by the villagers).

A closer look at Graph 4 shows that villagers feel threatened by chemical fertilisers and pesticides that are causing both environmental and health hazards (environmental = raw score 50, health = raw score 39 and 35).

The use of chemical fertilisers and pesticides has created several negative environmental effects. Many farmers expressed their experiences with the use of chemical fertilisers and pesticides. Because the rainfall is unpredictable and short, the fertilisers applied have critically spoiled the lands. In several instances, this has resulted in crop loss. Use of chemical fertilisers results in the loss of natural fertility, and makes revival of soils a difficult process.

While the effectiveness of chemical fertilisers lasts for one to two years at best, the use of farmyard manure can sustain soil fertility up to 10 years. Farmers want to be advised on viable alternatives available to them to continue producing organic crops.

They are prepared to work hard, and are confident that by using farmyard manure, compost, and vermiculture practices, they will obtain good yields.

The use of chemical fertilisers has reduced soil microbes, resulting in micronutrient deficiencies. The excessive use of pesticides has cut down the bird and natural predatory population. This has led to an increase of pests and diseases.

Health issues were raised throughout the meetings as a major concern for villagers.

a. Villagers are aware of the high nutritional value of traditional crops. Many villagers commented that they are not as strong or energetic as their forefathers were at their age. This comment has been attributed to the fact that previous generations consumed a diverse diet of primarily and highly nutritious traditional crops.

   The farmers also perceived that there is an effective reduction in life span, in spite of the fact that the government makes contrary claims.

b. Villagers have had to seek medical attention more frequently than ever before. This has been attributed to two predicaments:

   i. inadequacy in the nutritional content of crops consumed today

ii. increase in consumption of chemically cultivated foods.

Traditional crops and varieties, in addition to being nutritive, were curative for a wide range of health problems, which the modern medicine cannot deal with.

c. The cultivation of traditional crops encourages diversity in cropping; many of these crops have medicinal value. Most villagers discussed how age-old methods for healing illnesses have slowly disappeared along with the crops that provided such remedies.

Refer to graph 4 to see other circumstances villagers feel are threatening the cultivation of traditional crops/agricultural practices.

Please see Graph 4

The agrobidiversity in the Deccan is highly influenced by women both in the areas of conservation and wise use. Women have shown extraordinary perspectives in the debates around yield and production vis a vis diversity on lands. There are many traditional practices which celebrate the intellectual leadership provided by women in agriculture especially in the areas of crop planning, biodiversity and conservation of germplasm.

Therefore the Jatras provided a special forum for women and encouraged them to voice their concerns in the public. Though in terms of percentatge women made up for more than 60% of the jatra participants, when it came to articulating their concern in the meetings, they were a bit hesitant. Still, what they voiced was significant. [**SEE: BOX : GENDER AND JATRAS**]

Beyond the explicit concerns articulated, it is also important to note the very special cultural and emotional linkages between people and biodiversity that the jatras brought out. **[SEE BOX : CULTURAL AND EMOTIONAL LINKAGES]**

5. MAJOR ACTORS AND THEIR CURRENT ROLES RELEVANT TO BIODIVERSITY

- The Government has been very passive about the issue of agricultural bio-diversity. It has neglected this significant issue of concern. In fact, the government has been indirectly acting against the interests of bio-diversity in agriculture through its policies of supporting and promoting modern farming. The only exception is discussions in Government circles on agro bio-diversity in relation to Integrated Pest Management. Overall, the government is aggressively promoting monocultural practices and the use of modern seeds and chemical fertilisers.

- Only a few citizens' groups in the Medak District have some knowledge or concern about the issue of agro-biodiversity. There are one or two small NGOs that are working on Joint Forest Management issues and therefore engaged in the debate on bio-diversity.

- The MEDVAN (Medak District Voluntary Association's Network), a coalition of 20 NGOs in the District has been a part of the Andhra Pradesh Coalition in Defence of Diversity which is primarily working on the issue of agro-biodiversity.

- The major activity taken up by MEDVAN has been to initiate the preparation of Community Bio-diversity Registers in the District. The MEDVAN has also participated in generating awareness among the farming communities about the severe threat for agro-biodiversity posed by the Agricultural Policy proposed by the Government of Andhra Pradesh as part of its Vision 2020.

- *Deccan Development Society*

- The Deccan Development Society, a NGO working in the Zaheerabad region for nearly two decades with women's groups from the socio-economically disadvantaged populations (mainly dalits), is one group that is consistently working on the issue of agro-biodiversity.

GENDER AND THE JATRA

In the Women's studies circles and among the gender analysts there is a consensus that a biodiverse, food production system of agriculture is women-friendly. This opinion is shared by 125 women who spoke on behalf of the women of the Zaheerabad region in the Deccan are of Andhra Pradesh.

The participation of women was sought in several fora:

1	*LAC meeting*	*(Total 24, 10 were women 45%)*
2	*Sarpanchas meeting*	*(Total 60, 14 were women 23%)* "
3	*Women's meeting*	*(Total 105, 95 were women 90.4%)*
4	*Farmers meetings*	*(Total 95, 20 were women 21%)*
5	*NGO's meeting*	*(Total 52, 17 were women 32.70%)*
5.	*Jataras*	*Total jataras; total persons; how manywomen (approximately about 20,000 Persons of which 60% were women)*

The concerns of the women was articulated by about 250 women who spoke up. Since a majority of the women who attended these meetings came from disadvantaged socio economic classes, it was difficult for them to freely speak up in front of the men in the meetings among whom were men from the upper castes and richer and powerful farming families, who were their employers in wage work (rephrase this sentence)

In spite of this disadvantage, there were several times when the women engaged in vibrant discussions with the men and sometimes even challenged the notions being propagated by men landlords that women are unwilling to participate in the agricultural work when they grow traditional food crops. In some villages women even challenged the landlords that "they would engage in a preferential participation when traditional crops are grown, will take wages only in kind and would be willing even to take 25% less wages than the wages they receive on cash crops"

An analysis of the more than 500 women's responses across 62 villages during the jatras highlighted some general as well as few issues that were particularly relevant to women. These women belong to the farming community in these villages. A few of them occupy the elected posts in local panchayats. The purpose of this analysis was to find out the relative differences in the approaches to traditional agriculture between men and women.

Based on the discussions during the jatras the women cited various significant factors that affected their efforts in pursuing traditional practices of agriculture. The following report summarises some of their concerns.

Nutritional, dietary and recuperative value of traditional crops.

- *There was a consensus among the women about the virtues of traditional foods. The crops serve the purpose of diet foods, having inherent ability to give strength apart from providing nutrition. Women reported that the younger generation, which now consumes modern, chemically grown foods, is less strong and are vulnerable to diseases. Chemical fertilisers have reduced the resistance to diseases. They opined that traditional crops were good for health.*
- *Women's reproductive health was much better when they consumed traditional foods. As Sara Mallamma articulates, " I used to eat Korra rice and hibiscus curry. I gave birth to 9 children but I did not take a single injection." Sivamma also joins saying, " In the past we served rice made out of foxtail millet to women giving birth to children. It used to provide warmth for them"*

- ***Changing trends in agriculture****Women complained that the big farmers who used to previously grow traditional crops have now shifted to cash crops for profit reasons. When women worked in these farms they receive cash as wages as against foodgrain which they used to receive as wages when they worked in traditional farms. They value this food more than the cash they receive. Given a choice, they would prefer working as wage labor in farms which cultivate traditional crops.*

Economic factors

- *The women stated that there is no market value for traditional crops. They felt the need for a market for the traditional crops.*
- *The Government should make conscious efforts to advertise the uniqueness of these crops on television and radio.*
- *Loans need to be provided to the average farmer for growing traditional crops.*

Education and awareness

- *School children should be taught the importance of traditional crops.*
- *Traditional foods should be included in their mid day meals in schools*

Emotional and cultural linkages of the bio-diversity jatras

The biodiveristy jatras could have been a sterile exhibition of the biodiversity that exists in the villages. It could have been very theoretical, professing the virtues of traditional farming, but it was more than a simple awareness programme.

However, the jatras did not end up like that. They became an expression of the deep emotional and spiritual relationship between the farmer and soil, agriculture and environment. For the farmers, agriculture is not simply a means of livelihood, it signifies much more than that. It embodies an entire way of life, their culture, rituals and traditions.

The jatras were village-centered exercises, involving all the members of the village. It fostered community feeling among the participants. The jatras provided a platform to share experiences for the farmers.

The jatras were an emotional catharsis for the villagers. Men and women were nostalgic when they saw such a gamut of traditional seeds and crops. It reminded them of their past culture and traditions. There were instances where women cried at the sight of these traditional seeds. The traditional agriculture was only a faint reminiscence of a rich past that once existed with the people.

The jatras served a religious purpose too. The people placed seeds in small earthen pots and worshipped together. At some point, for some senior members in the village, the jatras assumed a divine proportion. For one woman, the jatra served her long time dream to get in touch with her past. After the jatra, she felt as though there was nothing else she wanted in life.

These jatras also witnessed expressions of anger and disapproval of the existing modern farming methods, which threatened the bio-diversity of the land. Many of them related their experiences of how they lost their lands after they adopted the modern techniques in farming. The farmers came to a consensus that chemical fertilizers were like poison to their land. They rendered their lands unproductive and useless for further farming. The fertilizers and pesticides also contributed to water pollution in many cases. All these led to considerable decline in the general health of the villagers.

In most of the village meetings, the main point of discussion was how the excessive chemicalisation and the current mechanization of agriculture had disrupted the harmony between man and nature. In pursuit of profits and short-term gains in the market, the farmers have hastily shifted to cash crops without thinking about the long-term

- It has pioneered Permaculture, a designed organic farming method based on bio-diversity and has established Community Gene Banks consisting of a large variety of local land races. It has involved women's groups from over 60 villages and more than 1000 women farmers in an *in situ* conservation and enhancement of agro-biodiversity on their own farms.

- The Society has also been championing the cause of agro-biodiversity with local, regional, national and international communities. It has founded the Andhra Pradesh Coalition in Defence of Diversity, a coalition of over 120 NGOs from all the districts of Andhra Pradesh.

- DDS is also networking with a number of national NGOs on this issue besides being a leading member of the SANFEC (South Asian Network for Food, Ecology and Culture), a coalition of over 200 ecological groups from Bangladesh, Nepal, India, Pakistan and Sri Lanka.

- The Society has initiated a number of studies related to biodiversity in agriculture. The major studies are:
  - *Economics of Ecological Agriculture* in collaboration with the FAO.
  - A study on *Uncultivated Foods* in collaboration with the International Development Research Centre (IDRC) of Canada.
  - A study on *Farmers Perception of Agro-Biodiversity* for the Using Diversity Group

- A study on *Farmers Perception of the Nutritional Value of Traditional Foods* etc.

- The Krishi Vigyan Kendra of Medak District, which is administered by the DDS, has actively led many of these studies. The KVK has also been actively engaged in researching the ecological and biodiversity based agriculture in this, taking up for Front Line Demonstrations farmers' varieties and practices in agriculture.

- The *Pachasaale* (Green School) run by the Deccan Development Society is an active institution, which incorporates biodiversity in their academic curriculum. The School publishes a monthly school practical journal called *Permaculture Patrika,* which documents people's practices-- principally, biodiversity-based farming knowledge.

- The Permaculture Association of India has a small presence in the District for the last two years and has been working with some farmers on the issue of agro-biodiversity and farming system, based on this principle.

- *Local Communities*

  The issue of biodiversity has been taken up by the 90 odd DDS sangams, which have a membership of over 5000 women. It is a strong community level organisation in 75 villages that has been working towards restoring biodiversity in agriculture. Women like Gangwar Anjamma, Gangwar Manemma, Bidakanne Sammamma, Humnapur Laxmamma, Cheelamamidi Laxmamma and others have pioneered the discourse on the relationship between gender and agro-biodiversity.

- *Role of ICRISAT*

  ICRISAT, an International Crop Research Institute for Semi Arid Tropics is located in the District of Medak. Plant breeders and geneticians from the Institute are involved in developing improved varieties of sorghum, pearl millet, groundnut, chickpea, with an emphasis on traits such as disease and pest resistance, grain yield, and drought resistance. Now, ICRISAT focuses on the selection of breeding lines. which are then made available to breeders from the private and public sectors for the development of hybrids. Breeders from ICRISAT work primarily from existing lines and improved varieties, supplementing these with germ plasm, collected in the gene-bank of the Institute, which is an ex situ collection.

  There has not been much significant effort to involve farmers in the management of these collections, which could be done by pursuing a policy of on-farm conservation of genetic resources. Some participatory breeding activities have been undertaken, however, to address the low level of adoption

of the improved pearl millet varieties by marginal farmers in various regions of the country.

Despite these achievements, ICRISAT does not seem to have addressed the issue of agro-biodiversity, at least not explicitly, except in the IPM programmes where crop diversity is seen as an integral element in the management practices for pest control. Even these programmes have not paid any attention to the cultural and economic dimensions of agro-biodiversity.

- *Industry and Corporate Sector*

No industry or corporate sector has ever contributed towards agro-biodiversity. In fact their actions have consistently harmed biodiversity in this region. The Patancheru industrial belt, which falls in this district, has created a biological desert in about 29 villages surrounding it by poisoning the water stream *Nakkavagu.* This river was a major source of irrigation for farmers in this region.

The air has been so polluted by these industries that an unbearable stench hangs in the air over an area stretching nearly two kilometers on the Hyderabad–Bombay Highway. A population of about 60,000 people around this belt has to breathe this air day in and day out. Consequently, most of them suffer from respiratory illnesses, cancer, premature abortion and a host of other diseases. These 29 villages have also lost their entire agriculture, let alone the biodiversity on their farmlands. One estimate reveals that of all the polluting industries in the 22 districts of Andhra Pradesh, nearly 50% are located in Medak District alone, causing heavy damage to the agricultural environment in this area.

6. GAP ANALYSIS

6.(i) Gaps in information

An information-gap divides the scientific knowledge that exists with the researchers, extension workers, plant breeders etc and the local knowledge-systems of the people in villages, which form an integral part of their agriculture. It has been observed that there is a lack of awareness and understanding among the researchers, extension workers, etc about the benefits of crop diversity and the local solutions that farmers employ to combat pests or to increase soil fertility. Some of the important components of this wealth of knowledge are:

- Rotational and mixed cropping as a strategy for the preservation of soil fertility
  [E.g. nitrogen fixing crops like redgram (pigeonpea) *are grown on sandy soils, along with crops like jowar* (sorghum)*, bajra* (pearl millet)*, ragi* (finger millet)*, horsegram*(?) *and groundnut(?)]*

- Inter-cropping as a means of protecting certain crops from diseases *[sesame mixed with millet to ward off the striga ; castor protecting ginger and curcuma crops]* and pests [*chickpea acting as a trap crop for wheat against rats]*

- Diversity in cropping patterns as a means of managing climatic risk
  [The white variety of foxtail millet requires more humidity than the red variety, the manchu variety being the least demanding in water]

- The nutritional value of traditional crops *[millets, varied pulses etc]* and uncultivated foods, and the suitability of certain foods for particular seasons *[cooling ambali drink prepared from* saijonna,- *rabi jowar]*

- Medicinal value of particular crop varieties.
  [Young mothers consume red and white varieties of pigeon pea rather than the black one; thoka jonna and erra jonna, two kharif varieties of jowar, are used to make special rotis fed to people who have fever or rabies]

In order to fill the voids in the information a series of workshops and trainings need to be organised for the farm scienists, extension personnel and agricultural bureaucrats on the role and merits of biodiverse farming systems.

The information gap existing in the agricultural extension personnel, bureaucras and farm scientists needs to be filled with suitable measures. A new perception on the biodiverse farming system from the farmers perspective needs to be inculcated in these sections of policy makers and implementers.

6.(ii) Gaps in vision

- While the farmers' vision has always encompassed long term security of their farmlands and the health of the humans and the cattle, the vision of the agricultural policy makers and associated institutions has been to reap a short term benefit. These two mismatched visions have created a wide gap in the understanding of the local agricultural systems.

- Farmers have treated soils as Mother Earth and revered her as their own mother. This spiritual and emotional understanding of soil and agriculture is not understood by the administrators and scientists, for whom soils are nothing but a tool of production. The vision of farmers makes it possible for them to harmonise their agriculture with ecological imperatives, while the government-driven agriculture policies end up being ecologically destructive.

- The government understands productivity as a single crop yield whereas farmers have always treated productivity as a system yield, based on biodiversity. The inability of the government agencies to understand this complex vision of farmers has resulted in each of the state policies becoming

anti-diversity. Similarly, the food security assured by the traditional farming systems has never been really appreciated by the government.

- For example, a number of uncultivated green leafy vegetables, collected by women from the field or its borders are a by-product of the traditional farming system. In some cases, this constitutes nearly 30% of all the nutrition of the poor. But this phenomenon has not been taken into account in the overall understanding of rural people's livelihood. The use of chemical inputs has led to a decrease in consumption of these leafy greens. Hence, the poorest sections of society are loosing access to free sources of vitamins and minerals.

- There is a gradual change in the food habits of the people, away from minor cereals, pulses and leafy greens, which is also accompanied by the decline of the jowar culture. This culture forms an integral part of the biodiversity, with its festivals, recipes, rhythms and songs.

- The traditional diet has a strong medicinal component, with a range of cultivated and wild plants being used by people to remain in good health. Hence, the decline in crop diversity also means that people's self-reliance in terms of healthcare is jeopardised, because of an increased dependence on purchased drugs.

- A wider debate on the definition of yield and productivity, unrecognised merits of traditional farming systems, traditional diets and their holistic nature needs to be initiated. This debate should also encompass the critical role they play in the conservation and enhancement of agro biodiversity. Such a debate should engage various stakeholders and help them in the process of rediscovering these merits.

6.(iii) Gaps in policy and legal structure

- Policy makers overlooked the fact that the exclusion of traditional dry-land crops from the Public Distribution System would lead to their decline. This also meant an increase in the number of fallow lands, since it became more expensive to grow millets rather than buy subsidised rice.

- Credit was made available for crops that required irrigation [like sugarcane] in dry land regions, leading to the rapid depletion of groundwater tables whereas, ideally, measures should have been taken to preserve water resources in the region.

- The new legislation on Farmers' rights, Plant Breeders' rights and the Protection of New Plant Varieties accords a low key acknowledgement to the role of farmers as breeders. This poses a risk that the farmers' ability to breed varieties according to their own criteria would be jeopardised. This would lead

to an increased reliance on the formal breeding sector, which often does not address the seed needs of small and marginal farmers.

- There needs to be a new policy debate which takes into account the enormous srengths of sorghum and millets in human and cattle diet.

- A paradigm shift has to be brought about in the PDS policies of the state to recognise these benefits and incorporate in the PDS policies.

- Institutional finace policies should start recognising their social and ecological role in supporting the millet-sorghum farming systems. There should also be an emphasis on the ecological implications of the institutional credit in a fragile ecosystem. For eg. encouragement to sugarcane cultivation through bank credit in semi arid areas might create a very deep groundwater crisis alongside wiping out the agrodiversity which had been fashioned over millenia by the strong wisdom and knowledge systems of farmers in the region.

6.(iv) Gaps in institutional and human capacity

- The role of women in the maintenance of crop diversity in their fields, seed jars and kitchens has not been acknowledged by most players in the fields of agriculture and biodiversity management in government offices, research institutions and NGOs

- The knowledge of farmers, particularly women farmers, about seed selection, preservation, storing methods, recipes and the like has been largely disregarded by institutions.

- Plant breeders usually fail to acknowledge the capacity of farmers to :
  - Define their own criteria for the selection of useful varieties
  - Preserve genetic diversity on farm in a more efficient and inexpensive way than any Gene bank.

- Food-stock is being centrally managed at great cost, whereas community grain funds could be run by the villagers themselves at a much lesser cost, with the added benefit of farmers' control over the nature and volume of grain stored during different periods of the year.

- `Formal institutions like agricultural departments,universities and research stations should start seriously documenting the contribution of biodiversity to sustainable agriculture In this process they should also involve farming women in a participatory research mode and benefit from the enormous amount of knowledge and insights these women possess.

7 MAJOR STRATEGIES TO FILL GAPS AND ENHANCE ONGOING MEASURES

As with the problems, the attempt in this section is to bring farmers' own solutions to the problem of declining biodiversity in their agriculture. The farmers' solutions are visually depicted in Graph 2.

(Graph 2 includes *only* those comments that pertain to the "Demands" category (20 of 40 total comments made by the villagers).

A closer look at this graph reveals that villagers have been able to pinpoint the kinds of support-mechanisms they need to successfully cultivate traditional crops. One example (as represented by the third tallest bar – raw score 46), shows that villagers have a strong desire to abolish the use of chemical fertilisers and pesticides that have a negative long-term effects for the soil, animals and people.

Furthermore, many varying social factors have had an impact in determining which crops will or will not be cultivated.

For instance, the consumption of a traditional crop like millet requires that it be processed first. In the past, it was the women's role to hand grind/pound the millet. The change in food habits, by way of shifting to rice, has distanced them from this manual work. Today, women are not in a position to continue the practice even if they wish to, due to less stamina. Many elders have expressed their growing concern over the lack of interest in their children about farming. The present generation is not interested and/or is unwilling to farm the land, as the agricultural profession is looked down in society. And if they take to farming, the educated youth, who have lost attachment to the land, and do not carry and respect the traditional knowledge of their forefathers, are adopting 'modern' chemical agriculture, with the support of companies and media. This situation needs to be seriously confronted.

Several villagers discussed how they felt the Jatra meetings were extremely valuable. The meetings allowed everybody to share ideas, discuss problems, arrive at solutions and collaborate on new ideas. The organisation of a farmers' union would adopt many of these same attributes. More importantly, a union would position farmers to gain more control over the rates of traditional crops in the marketplace.

Refer to GRAPH 2 to see further details on "Demands" discussed by villagers.

8 REQUIRED ACTION TO FILL GAPS AND ENHANCE STRENGTHEN ONGOING MEASURES

8.a Supply of cheap rice through the Public Distribution System has been the single most cause of destruction of millets and sorghum in the farming systems. In order to correct this historical mistake, *the Government must introduce jowar in the PDS system. This will open up a huge market for the traditional jowar- farmers of*

the Deccan, and rekindle interest in their own cropping practices y while enhancing biodiversity on their fields.

8.b Another important effort towards creating new markets and regenerating the farming diversity is the *introduction of sorghum and millets in the diet system of the government hostels and the ICDS schemes.*. As suggested by thousands of farmers during the consultations, this action will not only open up a large market segment for the millet farmers, but also be decisive in reshaping the food tastes of a new generation, besides improving their nutritional status and health.

8.c A simultaneous action should be to recognise that the changing tastes of children have been caused mostly by aggressive commercial media campaign. *This needs to be reversed through an early education. Therefore, efforts must be made to put the issue of agro biodiversity and safe foods into the curriculum of schools and colleges.* This will help children to scientifically understand the nutritional superiority of their own food systems, and help them overcome the mispropaganda carried out in the media by commercial interests.

8.d As with children, the media has played havoc in changing the status perception of millets and sorghum in the adult minds. This must be countered through a vigorous educational campaign to introduce sorghum and millets into the diets of people. The government,t primarily, must handle this responsibility. *The high nutritional value of the traditional millets and sorghum must be made known to people through government media as well as through a well- organised campaign in the villages.*

8.e Since the lending policies of the government highly favour commodity crops and systematically ignore sorghum and millets, there is no level playing field for the millet farmers. This must be corrected through a chanage in lending policy. *The financial lending policy, which supports commodity crops like sugarcane, horticulture etc. must also be extended to the traditional biodiversity farming systems in the Deccan.*

8.f As with the lending policies the insurance policies are also loaded against the millet farmers. This must be , and *the traditional farmers who grow a diverse variety of crops on their rain-fed farms must get insurance cover.*

8.g *Enterprises that support traditional crops should be set up. As a part of the rural processing industry development policy, small processing machines which can pound and dehusk small millets like foxtail millet, little millet and kodo millet must be set up in villages.* These will give a definite fillip to many a minor millet like foxtail millet and little millet, which are highly nutritious, but difficult to process. Such machines can be owned and operated by women's groups like DWCRA and self-help groups, and can give them a great income edge.

8.h Since organic manure is the most critical component of this farming system, policies to increase cattle wealth in villages should be revived. The IRDP lending policies, which used to promote cattle- related lending have stopped doing so and have instead initiated lending for farm machines. Cattle are the primary suppliers of farmyard manure, which is the soul of traditional farming. *The*

lending institutions must understand this critical link between cattle availability and agro biodiversity and offer loans to farmers for the purchase of plough bullocks as well as milch animals. Their increased presence in the farming system will help bring back biodiversity to the farming.

8.i The two mechanical meat factories, which slaughter hundreds of animals every day for export of beef beef,are accentuating the problem of cattle reduction in villages. They help the distress- sale of cattle and their theft. *Considering the fragile nature of the region and the importance of conserving cattle here, the two beef exporting mechanical slaughterhouses in Medak district must be closed down.*

8.j In order to supplement the farmyard manure, capacity- building measures for farmers is necessary. *Farmers must be trained in the production of backyard biofertilisers and enriching of their composts. This will enhance the availability of non- chemical fertilisers and lessen the problems faced by traditional farming systems.* However, caution must be exercised to see that biofertilisers like vermicompost must be used only as a **supplement** to FYM and not as a **complement.** Otherwise, this may again create imbalances in the soil.

8.k Farmers have been organised around many other farming systems like the Cane Development Society, which works for sugarcane farmers, the Mango Growers Society etc. *But there is no farmers' organisation to care for millets and biodiversity , The emergence of such an organisation is a dire necessity for the farmers to be able to enjoy a sense of solidarity and a strong bargaining position. to give them a sense of solidarity and bargaining position.*

8.l *Success stories of farmers who are following traditional systems of cropping with good yields, of farmers who are cultivating traditional crops, which are on the verge of extinction, should be documented and in turn utilised for creating awareness in the farming community***.**

NATIONAL BIODIVERSITY STRATEGY & ACTION PLAN

LIST OF LOCAL ADVISORY COMMITTEE MEMBERS

Annexure - I

1. Ms. Anjamma – Gangwar Village, Nyalkal Mandal – Farmer
2. Assistant Director of Horticulture – Department of Horticulture, Medak Dt.
3. Mr. B Suresh Reddy - Coordinator – LAC
4. Mr. Baganna – Jadimalkapur village, Zaheerabad Mandal – Farmer & Secretary Watershed Development Programme.
5. Mr. Baswaraj Patel –Mamidgi Village, Nyalkal Mandal – Farmer
6. Ms. Chinnamma – Chalki Village, Nyalkal Mandal – Health Worker
7. District Forest Officer – Department of Forest – Medak District
8. Dr Khan Shaheen Begum – Assistant Veterinary Surgeon, Alladurg Mandal
9. Dr Ramanjaneyulu – Scientist, Directorate of Oilseeds Research, Hyderabad – Expert in the subject concerned
10. Dr Shashi Bushan – Senior Scientist & Coordinator of District Agricultural Advisory & Transer of Technology Centre, Medak District (Acharya NG Ranga Agricultural University)
11. Dr Venkat – President, Permaculture Association of India – NGO
12. Head,Fruit Research Station (Acharya N.G. Ranga Agricultural University), Sangareddy, Medak district.
13. Mr. Jayappa –Bardipur Village, Jharasangam Mandal – Farmer
14. Joint Director of Agriculture – Department of Agriculture, Medak District
15. Joint Director of Animal Husbandry – Department of Animal Husbandry, Medak District
16. Ms. Kamli Bai – Laccha Naik Hamlet, Anekunta Village, Zaheerabad – Farmer & President of Mahila Cooperative Bank
17. Ms. Kashiamma – Ganeshpur Village, Nyalkal Mandal – JFM Committee Chair woman
18. Mr. Krishna Reddy – Kalmela Village, Sadasivapet Mandal – Farmer
19. Ms. Laxmamma – Humnapur Village, Nyalkal Mandal – Farmer
20. Mr. Laxman Naik – Upperpally Hamlet, Vittu Naik Panchayat, Zaheerabad Mandal – Farmer
21. Mr. Majharuddin – Kohir Village, Kohir Mandal – Mango farmer
22. Manager,Lead Bank (S.B.I), Sanga reddy, Medak district.
23. Mandal Development Officer, Zaheerabad, Medak district.
24. Mr. Manohar Rao – Navajyothi – NGO working in this region for long time.
25. Mr. Mogulanna –Eedulapally Village, Jharasangam Mandal – Farmer & Secretary Watershed Development Programme
26. Mr. P V Satheesh, Director - Male - DDS & Member TPCG
27. Mr. Ratnam –Member, AP Coalition in Defence of Diversity
28. Ms. Ratnamma – Algole Village, Zaheerabad Mandal – Farmer
29. Ms. Sammamma B – Bidakanne Village, Jharasangam Mandal - Farmer

30. Ms. Santhoshamma –Basanthpur Village, Nyalkal Mandal – Health Worker

31. Mr.Vijay Kumar –Cane Development Manager,Nizam Sugar Factory, Zaheerabad
32. Mr. Vishwanath Patel –Kalbemal Village, Nyalkal Mandal – Village Sarpanch

Annexure -

SECTORAL MEETING OF LOCAL ADVISORY COMMITTEE AS A PART OF THE DECCAN SUB STATE PLAN

DDS-KVK, ZAHEERABAD, AUGUST 28, 200O & NOVEMBER 5, 2000

First Meeting

The first meeting of the Local Advisory Committee for substate site Zaheerabad region of Deccan area was conducted on 28th August 2000. Twenty members attended the meeting out of total 30 committee members.

The members attended belonged to the following categories:

	Women	Men	Dalit	Adivasi	Others
Marginal farmers	3	-	3	-	-
Small farmers	3	1	4	-	-
Medium farmers	1	1	-	2	-
Big farmers	-	3	-	-	3
Govt. Officers	-	2	-	-	2
N.G.O.s	-	2	-	-	2
Scientists	-	-	-	-	-
Politicians	1	1	1	-	1
Representatives of village level institutions.	2	3	-	2	3

Dr.Venkat and Dr.Ramanjaneyulu (Scientist) and few others could not attend the meeting as they were pre-occupied on that day. They promised to attend the future meetings of Local Advisory Committee.

The following is a summary of first local advisory committee meeting.

All the members expressed their happiness at fact the government was addressing such an important aspect although it is a bit late. They felt that by listening to grass root level views it would be possible for these views to be reflected all over the country. This meeting was viewed as giving an opportunity for their voices to be heard.

Members expressed concern over the disappearance of several species both plant and animal and emphasized the need to study the reasons for reduction in Agro-biodiversity.

Members felt that chemicalisation of agriculture should be avoided. Hybrids should not be cultivated.

Hazards of both chemicals in agriculture and monoculture systems were thoroughly discussed and farmers shared their personal experiences in relation to these issues.

Farmers should be encouraged to cultivate traditional crops especially crops of minor millets that are under threat. The Govt. must conduct research on these crops especially in the area of post harvest process for wider cultivation.

Enterprises that support traditional crops should be set up.

Connecting links in nature must be understood and the Govt. must support research in these areas.

Members felt that the cropping systems, crop rotations and diversity that the farmers are following in this region have excellent scientific principles embedded in it.

Govt. policies and peoples action, which reduces the diversity, must stop.

The committee should meet again in the middle of October to discuss the plan of action for the coming year.

The meeting was documented using photo and video documentation.

Second Meeting

The second meeting of Local Advisory Committee was organised on 5th November 2000. This was attended by 22 committee members out of 30. The details of the participants are as follows.

The members attended belonged to the following categories:

	Women	**Men**	**Dalit**	**Adivasi**	**Others**
Marginal farmers	3	-	3	-	-
Small farmers	3	1	4	-	-
Medium farmers	1	1	-	2	-
Big farmers	-	3	-	-	3
Govt. Officers	-	4	-	-	4
N.G.O.s	-	2	-	-	2

Scientists	-	2	-	-	2
Politicians	1	-	1	-	-
Representatives of village level institutions.	2	3	-	2	3

After the formal welcome to the participants, the members introduced themselves as few members were attending the advisory committee meeting for the first time.

The idea and purpose behind the preparation of NBSAP at different levels was explained to the participants again in the second meeting as few new members joined.

The gist of the first meeting was presented to the members to recap what has happened in the last meeting.

Then the outcome of the another committee meeting conducted on November 1, exclusively with farmers was presented to the other members for their comments. This farmers meeting was attended by 12 farmers out of 15 members present in the committee. Out come of the farmers meeting is as follows.

All the farmers strongly agreed and argued that their should be diversity in Agriculture. When the discussion went on further about how the existing diversity can be safeguarded and enhanced the farmers came out with the following suggestions.

- Cattle are must for our agriculture. Atleast each farmer should have 4 cattle. Agro biodiversity and cattle are interconnected. We must create awareness about hazards of chemical agriculture and simultaneously vigorously promote alternative fertilisers. (Khaja Majharuddin)
- Should support cultivation of millets specially minor millets(Laxmamma)
- Should initiate the cultivation of forgotten crops as demonstration crops in few villages to begin with so that farmers can be remembered again the extreme importance of this crops and their by we can conserve and the diversity (Laxman naik)
- Ninety percent of men are not working and sitting idle in the villages and on the contrary all the women are toiling hard to cultivate the crops. This is not a good sign for future agriculture and it should be looked into (Moghulana).
- Cattle play an important in role in farming by providing manure to soil, give products like curd, ghee, milk etc and the food produced using organic fertilisers is very safe for human beings (Baswaraj patil).
- Should start pit method of composting which used to be their in the villages for overcoming the problem of manure availability in sufficient quantities in the villages(Khaja Majharuddin)
- Supply of seeds of vanishing crops must be ensured to the farmers through the farmers committees (to ensure timely and quality seed) for slowly bringing back the old traditional crops into active cultivation(Lakshman naik).

- Each farmer must first grow the food required for his family in his own farm and then cultivate cash crops (Vishwanath patil).
- Success stories of farmers who are following traditional systems of cropping with good yeilds, Farmers cultivating traditional and crops which are at the verge of extinction and who are following organic methods should be documented and in turn utilised in creating awareness in the farming community (Jayappa).
- Farmers who are growing food crops should have insurance facility specially with high flexibility and quickness in repayment of insured amount in the event of crop loss through a farmer's committee of the same village constituting specifically for this purpose to avoid unnecessary delay in payment and for justice to the deserving (Vishwanath patil) .
- Interconnection of forest, horticultural crops and medicinal plants with agrobiodiversity must be understood properly (Ratnamma and Santoshamma).
- Support for marketing of traditional crops should be ensured(Laxmamma).
- All the farmers were highly interested to bring back the lost Sugar cane diversity into the region due to Nizam sugar factory's actively promoted varieties and discussed at length about the remarkableness of each traditional variety.
- We should try to inculcate the respective religious faiths into farmers specially the youth because no religion preaches the destruction of nature. Hence the same thing can be used by linking it with agro-biodiversity conservation and enhancement.
- The farmers preferred the seed procurement and active cultivation of Pedda baimugh kaya which according to them used to grow in drylands giving benefits like good yeild, fodder, oil, ground nut cake for animals, was useful in crop rotation and above all adds enormous fertility to the soil. Inspite of all these benefits farmers are not growing this crop once they lost all the seed material(Which is very costly) in the severe drought during 1972.Later, few farmers tried to grow it but later on decided to stop its cultivation fearing its theft as it is only available with them in the village and is very tasty to eat.
- Members felt that the area under the following crops is gradually shrinking and measures to be taken to increase the same. They are as follows.

1. Sajjalu
2. Samalu
3. Korralu
4. Vulvalu
5. Garib jonnalu
6. Bailodlu
7. Aargulu
8. Bandari pesari
9. Balantha pesari
10. Taidalu

As mentioned earlier all the farmers strongly argued infavour of bringing back the traditional Sugarcane varieties like Gomari cheruku, Manchi cheruku and 419 etc.

- There should be different strategies adopted for conserving and promoting agro-biodiversity in three different types of lands like ..

1. Infertile lands
2. Medium lands
3. Fertile lands capable of yielding two crops.(Jayappa)

After the presentation of the out come of the farmers meeting the members started expressing their opinion which is as follows.

Ramanjaneyulu

Government is promoting certain technologies like particular technology, seed or crop to the extreme extent. When problems arises due to adoption of such technologies it tries to recommend another technology without seriously understanding the basic reasons behind the problem.

He has quoted the following examples in support of his statement

1. Resistance to heliothis Pest in cotton high inputs involved in its cultivation leading to suicides by farmers.
2. Governments suggestion for crop holiday for Tobacco.
3. Bud necrosis disease in groundnut in Ananthapur district.
4. No electric power availability to rice growers due to power shortage etc.,

He felt there were very few discussions on why these problems have cropped up. Even if there were few meetings finding out few reasons for the problem. It was not seriously taken and translated into action.

> **Government is enlarging every small success by magnifying it but not planning based on the situation and specific local needs.**

At present production is not a problem. But what to do with the produce. There is not profitable market for it.

> **The present agriculture has totally become external input oriented agriculture. Neither inputs are ours and nor outputs are ours. We do not have control on any thing.**

I do not know whether government does deliberately or unknowingly its actions are not in the direction adressing the basic issues involved in these problems.

Biodiversity based production systems can address several of these problems.

Dr.Shashi Bushan:-Scientist

Farmers are also following crops of same trend. They are not maintaining their own seeds marketing of crop produce has become a problem. Farmers from resource rich coastal areas are migrating to these drylands doing farming with high external inputs. Local farmer in the process following them are unable to compete due to problems involved in it.

P.V. Satheesh brought out the following problems, which the farmers are facing

- Problem of market which is suddenly collapsing. Farmers cannot depend on it.
- Involvement of external technology in Agriculture.
- Resurgence of pests.
- Availability of quality food.
- Margin of profit in decreasing suddenly in chemical agriculture and mono cropping.

He wondered whether bio-diversity based farming systems can be a panacea atleast for majority of these problems.

When we have 10-12 crops on same piece of land and at a given time it helps in the following ways.

- *Adds fertility to soil*
- *Use both horizontal and vertical spaces efficiently*
- *Use solar energy efficiently.*
- *Selection of crop depends of soil depth*
- *It grows soil by continuous leaf fall of various crops.*

Women of drylands have a primal knowledge systems. Can we revisit their farming systems which are biodiversity based and addressing various things. To explain this Sri. P.V.Sateesh cited one example of most common cropping systems which is in vogue for years.

Cropping system:- Jowar + Redgram + Cowpea + Field bean + Teega pesari + Hibiscus + Sesamum + Bajra+Niger

He explained at the length the adoption of variety of genetic mixture in case of jowar and red gram which address environmental food, healthy and hunger needs of the people. Redgram Cowpea, Teega pesari and field bean are pulses which are highly nutritious and hence meet the nutritional security of farmer by being leguminous crops simultaneously they add soil fertility to soil which is extracted by a millet like sorghum these by maintaining the soil nutrient balance. Teega pesari and field bean are also excellent fodder for cattle along with jowar dry fodder which takes care of their cattle needs. Sesamum and Hibiscus meet oil needs of family. Red gram has good market value and their by meets commercial needs of the family. Hence biodiversity based agricultural

can it be an alternative to present problems arising due to huge external input and mono culture based agriculture.

Agricultural extension promotes different issues ignoring all these aspects.

Joint Director Animal Husbandry – Dr. N. Yadagir Rao.

The cultivation of sugarcane in Zaheerabad region is wasting huge quantities of ground water. Instead the farmer can grow crops which require less water comparatively with out fast depleting ground water aquifers.

Though the extension officers are educating farmers on certain aspects farmers are not listening. He gave an example of composting method in rural areas. In olden days farmers used to dump all the agricultural waste into compost pits which used to decompose well due to moisture availability in the pit there by killing the unwanted weed seeds. But the present system of dumping of waste into a heap on the flat ground is not fully decomposing the manure and also weed seeds there by increasing weeding costs. Joint director, Animal Husbandary felt that the reasearch done is not of so much use to the farmers.

Jayappa –Farmer

Now a day there is not much space for FYM in Agriculture. Slowly subsidies are being removed and it is very difficult for poor farmers to do farming. The agriculture is becoming a loss proposition and hence farmers are slowly shifting to cities for livelihood.

He also expressed concern about the extinction of traditional varieties of sugarcane which possessed high medicinal properties.

Suresh Reddy - DDS

He cited a recent example of blast disease incidence in Rice, in parts of Medak district due to monocropping with one variety of rice called BPT. But in this year's Kharif season farmers have gone for different varieties of rice except BPT even with 2-3 genetic mixtures of rice in each farm. This led to total control of blast disease and the crop is healthy. The continuous cultiviation of single BPT variety in rice season after season has resulted in epidemic disease of blast.

Kalmela Krishna Reddy – Farmer

Explained how he could harvest good yields using only Neem cake, blue green algae, glyrecedia leaf incorporation and applying bio-pesticides like neem oil for pest control. unfortunately government extension officer did not have time to visit his farm.

He felt that both cattle and crops are completely destroyed by modern practises and technologies.

The quantity of agricultural produce obtained is looked at rather than what type of quality it has. Explained the utility of buffaloes Omniotic fluid in pest control which can be stored for atleast a year.

P.V. Satheesh

Summarises saying that when you ask these dryland farmers why you adopt such a practise there answer is as follows

Our method of cropping pattern is

- *Good for human beings.*
- *Good for soil.*
- *Good for cattle.*

In principle all the members agreed that diversity is must and it should be protected.

Prakash Rao – Agriculture officer.

We should learn from farmers and we should diffuse the successful technologies adopted by them through mainstream extension system. Members felt that *District Agricultural Advisory and Transfer of Technology Centre* (Extension using of Andhra Pradesh Agricultural University) will be an appropriate forum for creating awareness apropos conservation and enhancement of Agro-biodiversity.

Dr.Sashi Bushan-Scientist

Said that identifying indigenous technical knowledge and upgrading it by conducting research on it is one of the objectives of DAATTC Centre.

Dr. Ramanjaneyulu – Scientist

Observed that the efforts are lacking in creating conceptual clarity on various issues. As an example he pointed out that even the non-chemical pesticidal management of pest adopted at individual farm level by one or two farmers is not going to serve purpose because agriculture is not individual and many things need collective approach. *In the same way the conceptual clarity about Agrobiodiversity should be enhanced.*

Dr. N. Yadagiri Rao – JD Animal Husbandary

Informed the government's decision to close Deoni Cattle Breeders farm at godgarpally village, few kms away from Zaheerabad which was meant for conservation and development of deoni breed of cattle which was native to deccan region. Unfortunately the government expresses its inability to run the farm succesfully due to several reasons.

JD(AH) asked if any body is willing to take over the farm and run it successfully,so that he can inform the govt.

Anjamma ,Sammamma and Laxmamma – Farmers

Explained about the individual gene banks at their houses and Agrobidiversity in there farms.

Khaja Majharuddin-Mango Farmer: In addition to conservation of agro-diversity he also stressed the need for conserving the unique Mango diversity of the region.

Malla Reddy – NAVAJYOTHI – N.G.O

We already started working in this area by initiating community biodiversity registers preparation in two villages. I feel happy to be associated with NBSAP and ready to take it further to more farmers.

P.V. Satheesh

Explained about the village level mobile biodiversity festivals to be organised in DDS operational villages starting from Jan 14th (From Sankranti to Ugadi) and extended invitation to all the local Advisory committee members to participate in these jatharas. *During Jataras ,there will be discussion with farmers in each village and plans will be prepared for conservation and enhancement of agro biodiversity for that village.*

It was decided to conduct several meetings to prepare sectoral plans with different types of farmers and the following committee members agreed to take the lead and responsibility in organising the meeting. DDS will help them by providing the required support. The details are as follows.

1. Dr. V. Shashi Busham of DAATTC has agreed to organise a meeting with DAATTC advisory committee members to discuss regarding the strategy and action plan for Agro-biodiversity of this region. Dr. Ramanjaneyulu agreed to take part and help them.
2. Dr. Bhuramuddin – Forest Range Officer – agreed to organise a meeting with Vana Samrakshana samithi farmers representing 12 VSS's in Zaheerabad region of Deccan.
3. Dr. Yadgiri Rao – JD(AH) Accepted to organise a meeting with their clientele.
4. Kalvemula Krishna Reddy – Farmer : will organise a meeting with medium and large farmers of his area.
5. Khaja Majharuddin: - Farmer – will organise a meeting with farmers specially the mango growers
6. Kamli Bhai :- Director, Mahila bank and Farmer – agreed to organise meeting with women farmers in her tribal community.
7. Baganna and Laxman naik:- Farmers- have agreed to organise a meeting with sarpanches of their surrounding villages.

It was decided that all the meetings will be conducted involving a minimum of 50 members. Those persons who took lead to organise the sectoral meetings indicated the tentative dates to organise there respective meetings which are likely to start from Nov 26th onwards and end in Jan 2nd week.

The meeting was documented using photo and video documentation.
Finally the meeting was closed by thanking all the farmers, scientists, N.G.O representatives and government official for their participation in the meeting, inspite of being organised on a SUNDAY.

List of Participants

1. Dr.Ramanjaneyulu - Scientist, Directorate of Oilseeds Research, Hyd-expert in the subject concerned.
2. Dr.Shashi Bushan - Senior Scientist and Co-ordinator of Dist. Agricultural Advisory and Transfer of Technology Centre, Medak dist (Acharya N.G Ranga Agricultural University)
3. Dr.Yadgiri Rao - Joint Director of Animal Husbandary – Dept. of Animal Husbandary, Medak dist.
4. *Mr B.Suresh Reddy – Scientist, Krishi Vigyana Kendra*
5. Mr Baganna - Sajjaraopet village, Zaheerabad mandal- Farmer
6. Mr Baswaraj Patel - Mamidgi village, Nyalkal mandal - farmer.
7. Mr Jayappa - Bardipur village, Jharasangam mandal - farmer
8. Mr Krishna Reddy - Kalmela village, Sadashivapet mandal - farmer
9. Mr Laxman Naik - Upper pally hamlet, Vittu Naik Panchayat, Zaheerabad mandal - farmer.
10. Mr Malla Reddy - Navajyothi – N.G.O working in this region for long time.
11. Mr Mazharuddin - Bilalpur village, Mandal kohir - Mango farmer.
12. Mr Md.Burannuddin - Forest Range Officer – Dept. of Forest – Zaheerabad range.
13. Mr Moghulana - Edulapally village, Jharasangam mandal - farmer and Secretary Watershed Development Programme.
14. Mr N.Prakash Rao - Agriculture Officer - Dept of Agriculture, Zaheerabad.
15. *Mr P V Satheesh – Director, Deccan Development Society,*
16. Mr Ratnam - Member, AP Coalition in Defence of Diversity.
17. Ms Anjamma - Gangwar village, Nyalkal mandal - farmer
18. Ms B. Sammamma - Bidakanne village,Jharasangam mandal - farmer
19. Ms Chinnamma - Chalki village, Nyalkal mandal - Mandal President.
20. Ms Kamli Bhai - Laccha naik hamlet, Anekunta village, Zaheerabad mandal - farmer and President of Mahila Co-operative Bank.
21. Ms Kashamma - Ganeshpur village, Nyalkal mandal - JFM Committee chairperson.
22. Ms Laxmamma - Humnapur village, Nyalkal mandal - farmer
23. Ms Ratnamma - Algole village, Zaheerabad mandal - farmer
24. Ms Santhoshamma - Basanthpur village, Nyalkal mandal - Health worker.

NATIONAL BIODIVERSITY STRATEGY & ACTION PLAN

SECTORAL MEETING OF ADIVASI AND WOMEN FARMERS AS A PART OF THE DECCAN SUB STATE PLAN

ANEGUNTA VILLAGE, DECEMBER 23, 2000

Annexure - III

As per the decision of 2nd meeting of Local advisory committee (Agro-biodiversity) it was decided to hold a series of meetings with different types of farmers in the region to further the process of preparing strategy and action plan for Agro-biodiversity in the region. Some of the members (Including women, men farmers, scientists, politicians, NGOs and also officers of line departments like agriculture, animal husbandry and forest) of the LAC volunteered to take the responsibility of organizing these meetings.

The first sectoral meeting was organised at Anegunta village on 23-12-2000 under the leadership of LAC member Kamli Bai, an adivasi woman farmer and also the director of Mahila cooperative bank supported by DRDA, Medak district.

The meeting was attended by the farmers of Anegunta village and hamlets Laccha Naik Thanda, Ontelgadda thanda, and Jeedigadda thanda surrounding it. Farmers belonging to Jambal thanda of Shekapur village and Gudigyar palli thanda of Malchemal village also participated.

A total of 116 farmers from these 3 villages (includes 5 thandas which come under revenue area of these villages) participated in the meeting. Out of 105 farmers 95 were women and 21 were men. The composition of participants is as follows.

Women	Men	B.C s		S .Cs		Adivasi		Others	
		Women	Men	Women	Men	Women	Men	Women	Men
95	21	8	3	10	2	74	15	3	1

The category of farmers included marginal and small farmers, medium farmers and large farmers and all of them have long and valuable experience in farming.

The meeting started with a song by Maruni Bai of Gudigarpally thanda, followed by Chinna Kamli bai, Nagamma, Chandi Bai and Narsamma of Laccha naik thanda, Anegunta and Jambal thanda respectively. Later all the participants introduced themselves.

Kamli Bai welcomed the farmers in lambadi language (Language of adivasi's) as it widely spoken in that area. She explained the purpose of organising the meeting and stressed the importance of utilising this opportunity to correct the flaws in the present agricultural systems which are not supportive to the farmers ,specially the poor and women and come out with concrete suggestions which they perceive are

very critical for the kind of agriculture they practice in the Semi-arid areas of Deccan. In brief, she compared the present agricultural situation with that of three decades back, the type of crops grown, inputs used, yields of crops, the type of food eaten and the health standards during these two situations. Then she requested Sri P.V.Sateesh, Member, TPCG, to explain the whole process of NBSAP and the purpose of doing it at various levels and specifically regarding the strategy and action plan preparation for Sub-state site of Deccan area.

Sri P.V.Satheesh started by drawing the attention of the farmers to the theme of one of the song by Narsamma in which a women, narrates the agricultural situation of the region and the farmers dependence on infertile soils and dryland agriculture. He points out, that the crops mentioned in the song are rarely grown now a days. Some of them were high yielding withstanding the vagaries of nature. Human beings and animals both could live on such crops. But the crops that are being grown now like Sunflower, wont yield even if there is a bit less irrigation. All poor people's crops are vanishing. Now a days, cultivation of only cash crops is encouraged by state by giving loans. He cited an example saying, how the cultivation of cash crop cotton, in Warangal district of Andhra Pradesh, has led to series of suicide deaths by farmers. Farmer shakru swiftly reacted to this point saying " *Adi Ayeethunnadi, aa pantalu meethaku radhu, thendiki radhu* "(It's happening, those crops are not suitable for fodder or for food) .

We are not growing crops, about whom we have knowledge, crops suitable to our soils and the crops which have medicinal significance. As we cannot change the soils totally we can only grow crops that can be grown on these lands. Unfortunately such crops are not encouraged by the government. But now through this NBSAP process government is asking the farmers to plan the agriculture by giving suggestions which will support the poor people's agriculture in these infertile dry land regions. As a part of this, we want to listen to the farmers of this Anegunta village and surrounding thandas as they plan for their region. Similarly, several such plans will be made in different villages by interacting and involving several farmers. All these plans together will be summarised to make a final plan for conservation and Sustainable use of the agro-biodiversity with gender balance and equitable distribution of the benefits of these agrobiodiversity conversation in Zaheerabad region of Deccan.

We would like to know from you, what type of crops you are interested in cultivation and what support you need for that. Did any land race is completely lost. How to bring them back into active cultivation. After bringing them back into cultivation how to maintain it further. So several such things have to planned for agro-biodiversity for your villages.

After P.V.Sateesh's presentation Samanna , a farmer of Annegunta village said that previously 20-25 yrs back we used to get 10 quintals of Black gram & 2 bags of Sesamum in 3 areas of land. In the same field we are not getting that yield now. Due to such things, people are cultivating crops like sugarcane which is giving

assured yield when inputs are provided where as the yield of other crops cannot be predicted due to pests or disease or prolonged dry spells of rain and due to any other problem. Even by chance we grow other food crops, there is no standard market rate for other crops due to up and downs in the market. So we are growing crops for which there is good market rate.

Then Mr.B.Suresh Reddy, Coordinator, Agrobiodiversity, has continued the proceedings of the day by questioning women about the type of soils in their villages. Responding to this farmers came out with a list of soil types. Farmers were asked to depict the soil types on the ground. A few women likeAnjamma and Kamlamma of Annegunta village, Dharmi bai of Ontelgadda thanda and Lali bai of Jeedi gadda thanda came forward and the facilitator asked them to choose the colour they like to represent the soil type .Soil types were represented using following colours

1. **Red soils - Red colour**
2. **Red stony soil - Red colour with small red stones here and there.**
3. **Black soil - Dark blue colour**
4. **Sodic soils - Yellow colour (Padhu bhoomulu)**
5. **Muddy soils - Sky blue**

Once the soil mapping was done, one women from each thanda, explained to the gathering about the soil types in their area which are as follows.

- **Jambal thanda - Red soil with small pebbles.**
- **Jeedegadda thanda -Red soil and Black soil**
- **Annegunta village - Red soil ,Black soil, Sodic soil and Muddy soil**
- **Ontelgadda thanda - Black soil, Red soil and Sodic soils.**
- **Gudigyar palli thanda - Black soil and Red soil.**

After the women have enthusiastically drawn the soil types present in their villages and thandas including the roads that connect these thandas from Anegunta village and also the direction in which their lands exists from Annegunta they were asked to indicate the crops grown in these different soil types in Kharif, Rabi and summer seasons.

It was interesting to see that the women have shown the crops grown on these soils with the help of seeds of respective crops. Seeds of some of the crops were not available and so they were cautious enough to indicate them orally while explaining to the gathering. The crops grown in various soils in different villages/hamlets is as mentioned below.

Anegunta

- **Sodic soils : Kodisama(*Panicum miliare*), Sesame(*Sesamum indicum)*, Black gram(*Phaseolus mungo)*, coriander*(Coriandrum sativum)*, Green gram*(Phaseolus auries)***

- **Red soils : Pearl millet*(Penisettum americanum)*, Cowpea(*Vigna sinensis)*, Redgram(*Cajanus cajani*), Jowar*(Sorghum vulgare)*, Field bean*(Dolichus lab lab)***

- **Black soils : Black gram, Green gram , Seasmum, Wheat(*Triticum vulgare)*, Redgram, Field bean,Tella kusuma*(Carthamus tinctorius)*, Linseed(*Linum usitassimum)*, Chickpea*(Cicer arietinum)*,**

- **Muddy soils : Dry sown Paddy*(Oryza sativa)*, Kodisama and Finger millet *(Elusine coracana)*.**

- **Cattle grazing: Nil**

- **Hillocks : Nil**

Jambal Thanda

- **Red soil :- Red gram, Jowar, Erra Pundi and Tella pundi*(Hibiscus cannabinus)*, Pearl millet, Sesamum,Niger(*Guizotia abyssinica)*, Finger millet,Dry sown Paddy, Cowpea.**

Jeedigadda Thanda

- **Red soil :- Sesamum, Hibiscus, Niger, Jowar, Wheat, Green gram, Taidalu(Finger millet),Redgram.**

- **Black soil :- Dry sown Paddy, Redgram, Sesamum, Hibiscus, Blackgram, Greengram, Chickpea, Saijonna(Rabi jowar), Tella kusuma.**

Ontelgadda Thanda

- **Sodic soils :- Sama, Korra*(Setaria italica)***
- **Black soils :- Black gram, Green gram, Field bean, Jowar, Redgram, Sesamum.**
- **Red soils :- Jowar, Red gram, Sesamum, Bajra(Pearl millet), Erra and Tella Pundi**
- **Under irrigated condition :- Sugarcane*(Saccharum officianalis)*, Ginger*(Zingiber officianalis)* ,Turmeric(*Curcuma longa)*, Potato(*Solanum tuberosum)*, Wheat, irrigated jowar and Ground nut*(Arachis hypogea)*.**

.

Godigyar pally Thanda

- **Black soil :- Black gram, Green gram, dry sown Paddy, Finger millet, Sama, Jowar, Cowpea, Field bean, Teega pesari(Creeper green gram) & Red gram.**

- **Red soil :- Pearl millet, Ginger , Hibiscus, Sama, Field bean, Pajjona(Kharif jowar variety),Attakodanla Jonna(Kharif jowar variety released by govt).**

Lacchanaik Thanda

- **Useke Bhoomi : Gaddi Nuvulu (Niger), Finger millet (Taidalu) Erra (Sandy soil) pundi(Hibiscus), Pearl millet.**
- **Red soil : Pajjona, Redgram, Bebbary(Cow pea), Atta Kodalu Jonna, Nalla Pundi,Groundnut, Ginger, Teega pesari.**
- **Black soil : Black gram, Green gram, Paddy, Nella Jonna, Red gram(Red,White and Black seeded varieties) Wheat, Field bean, Nuvvulu(Sesamum), Cowpea, Finger millet, Chick pea, Kusuma, Linseed, Mustard*(Brassica nigra)*, Voma(*Trachyspermum ammi)*, Saijonna.**

Once the crop mapping was completed one women from each thanda explained the crops grown in their village/hamlets.
This gave clear picture of the soil types and the diversity in cropping in these villages/hamlets.

Once the soil and crop mapping was done, facilitator asked the farmers to mention the crops and varieties that are under threat in their villages / hamlets and the extent of threat, these land races are facing due to several reasons. The crops under threat and the extent of threat as mentioned by farmers is as follows.

Name of the crop	% of Threat	Being replaced by
1. Finger millet (*Elusine coracana)*	**90%**	**Pajjonna,Atta kodandla jonna,Black gram,Green gram**
2. Manchu Korra *(Setaria italica)*	**90%**	**Pajjonna,Atta kodandla jonna,Black gram,Green gram**
3. Samalu *(Panicum miliare)*	**90%**	**Pajjonna,Atta kodandla jonna,Black gram,Green gram**
4. Pajjona (*Sorghum vulgare*)	**75%**	**Tella jonna.**
5. Erra Togarlu-red seeded (*Cajanus cajani)*	**75%**	**Tella Togarlu.**
6. Sajjalu (*Pennisettum americanum)*	**80%**	**Atta Kodala Jonna, Hybrid jowar**
7. Pedda baimuglu (*Arachis hypogea)*	**99%**	**Pajjonna, Black gram, Nuvullu.**
8. Manchi Nuvvulu (*Sesamum indicum)*	**75%**	**Minumulu, Pesari**
9. Saijonna-Rabi sorghum *(Sorghum vulgare)*	**75%**	**Neela Jonna, Cheruku, Pasupu, Irrigated Goduma**
10. Yenukati Tella togari		**- Total erosion**

(Cajanus cajani-Traditional white seeded one)

Farmers felt, that the main reasons for disappearance of crops like Finger millet, Manchu korra (One variety of fox tail millet which is capable of growing just by using Dew)and little millet are

- **Difficulty in pounding , to remove the outer seed coat for consumption.**
- **Ability of these millets to respond well to only Farm Yard Manure but not to Chemical fertiliser as they are not fertiliser responsive. As the Farm yard Manure availability to these crops is decreasing, the yields of these crops are going down.**
- **The availability of rice through Government Public Distribution System, at a cheaper rate is making us neglect these nutritious food crops unknowingly.**
- **Above all, though cultivated, these crops did not have any kind of market support.**

The White red gram Variety which used to be grown few decades back which was having high medicinal value is totally lost. The one that is grown is called Japan tella togari.

The area under Rabi Jowar, roti made out of which is most preferred even now in the deccan area is drastically decreasing as the black soils on which it is grown are being converted into irrigated lands and are being occupied by cash crops like Turmeric, Potato and Sugar cane etc.

The Pedda baimugh (Big ground nut) is just on the verge of extinction though interestingly it is preferred by every farmer of this region. After a deadly drought in early 70's the availability of the seeds of this crop significantly reduced and few farmers who had it, gradually reduced area under it as they feared the theft of the crop as it was very tasty and preferred by all .

Farmers felt that the dryland cash crops like Voma (Anise) are being grown by farmers though it is consumed in negligible quantities in the region, mainly due to its market rate of atleast Rs 3000/- to Rs 5000/Quintal.

They were all of the opinion that it will be better to have much diversity as possible in agriculture to meet their multiple needs.
When asked them about how it should be done? The farmers came out with the following suggestions.

1. **The cattle are very important for farming and also for soil fertility and hence support for Cattle and Farm Yard Manure should be given to farmers. More loans should be given to farmers in this area (Chandi bai of Jambal thanda and Sammanna of Anegunta village).**

❷ **We need good market price for the traditional food crops. (Dharmi bai of Jeedigadda thanda)**

❸ **Should take steps to ban the Chemical fertilisers and pesticide sale and the adulteration is causing heavy loss to farmers (Shakru naik of Laccha naik Thanda).**

❹ **Farmers should be supported for Farm yard Manure in what ever way possible, then only we can use our own seed but when chemical fertilisers are being used these seeds are not fertiliser responsive**

❺ **Need support for seed production of traditional big ground nut variety called Pedda baimugh as it is useful to soil fertility, food for human beings and excellent fodder for animals and was highly suitable to the soils of the region.**

At the end of the day Kamli bai, member LAC (Agrobiodiversity),thanked the farmers who have come in large numbers to participate in this process of NBSAP and for actively contributing to the process of preparing strategy and action plan for agrobiodiversity of the Zaheerabad region of Deccan area.

Mr.Suresh reddy, coordinator, agro biodiversity, has also thanked the farmers for their critical inputs and enthusiasm.

The meeting was documented using photo and video documentation.

List of participants

Sl.No	Farmer's Name	Male/Female	Sl.No	Farmer's Name	Male/Female
	Gudigyarpalli Tanda			**Jeedigadda Thanda**	
1	Chargi Bai	Female	1	Chandi Bai	Female
2	Kamli Bai	Female	2	Chandi Bai	Female
3	Lali Bai	Female	3	Chandri Bai	Female
4	Laxmi Bai	Female	4	Heeri Bai	Female
5	Manki Bai	Female	5	Heeri Bai - 2	Female
6	Maruni Bai	Female	6	Kamli Bai - 1	Female
7	Moti Bai	Female	7	Kamli Bai - 2	Female
8	Ranki Bai	Female	8	Kasini Bai	Female
9	Unki Bai	Female	9	Sakki Bai	Female
10	Meghnath	Male			
11	Sakku Bai	Female			
12	Sita Bai	Female			
13	Soni Bai	Female			
	Jambal Thanda			**Ontelgadda Thanda**	
1	Bikki Bai	Female	1	Chawli Bai	Female
2	Chandi Bai	Female	2	Dharmi Bai	Female
3	Chawli Bai	Female	3	Geni Bai	Female
4	Dhasli Bai	Female	4	Gomu Naik	Male
5	Heera Singh	Male	5	Gopya Naik	Male
6	Hundi Bai	Female	6	Gopal Naik	Male
7	Jali Bai	Female	7	Jamini Bai	Female
8	Jhali Bai	Female	8	Lali Bai	Female
9	Laxmi Bai	Female	9	Mangli Bai	Female
10	Sakru	Female	10	Premi Bai	Female
11	Summni Bai	Female	11	Ramki Bai	Female
12	Surki Bai	Female	12	Rukki Bai	Female
13	Umbli Bai - 1	Female	13	Setani Bai	Female
14	Umbli Bai - 2	Female	14	Soni Bai	Female
	Laccha Naik Thanda			**Anegunta**	
1	Bansi Lal	Male	1	Anashamma	Female
2	Baccha Naik	Male	2	Anjamma	Female
3	Devi Bai	Female	3	Anjamma	Female
4	Esa Naik	Male	4	Anshamma	Female
5	Gamni Bai	Female	5	Bhagirathamma	Female
6	Gomya Naik	Male	6	Chandramma	Female
7	Heru K	Male	7	Hanmanth	Male

8	Heru Naik	Male
9	Jali Bai	Female
10	Jamli Bai	Female
11	Joli Bai	Female
12	Kamli Bai	Female
13	Kamli Bai	Female
14	Kumni Bai	Female
15	Limbu Naik	Male
16	Lachu Naik	Male
17	Mangli Bai	Female
18	Mani Bai	Female
19	Moti Bai	Female
20	Nagi Bai	Female
21	Rami Bai	Female
22	Romani Bai	Female
23	Rukki Bai	Female
24	Sali Bai	Female
25	Sali Bai	Female
26	Savli Bai	Female
27	Seeta Bai	Female
28	Seetamma	Female
29	Shanker	Male
30	Shanker - K	Male
31	Shanti Bai	Female
32	Soli Bai	Female
33	Soni Bai	Female
34	Soni Bai	Female
35	Soni Bai	Female
36	Surki Bai	Female
37	Susheela Bai	Female
38	Tulshi Ram	Male
39	Unki Bai	Female
40	Unoosha Bai	Female

8	Hanmanth C	Male
9	Kamalamma	Female
10	Kamalamma	Female
11	Malamma	Female
12	Mallesh	Male
13	Manamma	Female
14	Naga Laxmi	Female
15	Nagamma	Female
16	Nagamma	Female
17	Papamma	Female
18	Pentamma	Female
19	Raniamma	Female
20	Rukkamma	Female
21	Samanna	Female
22	Satyamma	Female
23	Siddamma	Female
24	Veeraiah	Male
25	Veeramma	Female
26	Yesappa	Male

NATIONAL BIODIVERSITY STRATEGY & ACTION PLAN

SECTORAL MEETING OF VILLAGE SARPANCHAS AS A PART OF THE DECCAN SUB STATE PLAN

DDS - KVK, ZAHEERABAD, JANUARY 4, 2001

Annexure - IV

As a part of series of sectoral meetings being organized under the leadership of Local Advisory committee members for preparing strategy and action plan for Agro-biodiversity of the region, the second meeting with Sarpanchas (elected heads of Village Councils) of various villages in Zaheerabad region was organized. LAC members Baswaraj patil, Laxman Naik, Baganna and Smt. Chinnamma volunteered to organize this meeting.

The meeting was organized on 4-1-2001 at DDS-Krishi Vigyan Kendra, as per the wishes of LAC members since it was almost in the middle of Zaheerabad region and would be convenient for the Sarpanchas to attend the meeting.

The meeting was attended by the Sarpanches (who are also farmers) and few other farmers of 50 villages of Zaheerabad region.

The composition of participants is as follows.

Women	Men	B.C s		S .Cs		Adivasi		Others	
		Women	Men	Women	Men	Women	Men	Women	Men
14	44	6	8	8	4	-	3	-	29

The category of participants were marginal and small farmers, medium farmers and large farmers and all of them had long and valuable experience in farming.

The Sarpanchas made the following observations

- **Traditional practices were good.**
- **Soils have gotten accustomed to fertilizers and the situation must be reversed.**
- **All types of crop varieties are essential for farming**
- **Traditional crops do not have any market.**
- **Taidalu (Finger millet) is essential for cattle and human beings**
- **Due to the reduction in cattle population Farmyard manure availability also got reduced and hence it decreased the cultivation of traditional crops.**
- **Availability of labor has decreased.**
- **Cost of cultivation has increased in agriculture.**
- **Traditional varieties are getting lost because of the modern varieties that have been introduced by the government.**
- **Nowadays we are not sure of getting the crop till we harvest the crop.**

- **These days all crops are prone to pests and diseases.**
- **Chemicals are not good for farming**
- **Shelf life of crops has reduced in crops due to chemical fertilizers use for crop cultivation e.g. Onion and Ginger.**
- **Old systems need to be revived.**
- **Pedda Baimugh (Big Groundnut variety) and Dry sown paddy are almost extinct and should be revived.**
- **Taidalu (Finger millet) and korra (Fox tail millet) are very good for health.**
- **Traditional crops were drought resistant.**
- **The traditional food consumption practices do not have any bad reaction on health where as reverse is the case with modern practices. Traditional foods reduce the incidence of diseases.**
- **There is no bad reaction when traditional crops are grown or consumed.**
- **Manchi cheruku (Traditional sugar cane variety) cures jaundice**
- **There is unity among the farmers.**
- **Traditional system was good for us, but we see no way to come out of this.**
- **The population of live stock has lost.**
- **What ever has grown on the soil should exist.**
- **There should be support for cattle.**
- **Alternatives to pesticides need to be found.**
- **Import of food grains should be stopped.**
- **There should be awareness about the hazards of chemical agriculture.**
- **Seeds of traditional crops should be produced and supplied to the farmers.**
- **Traditional crops should have a good rate of minimum Rs 700/quintal**
- **Pounding machines are necessary.**

The meeting was concluded by a formal vote of thanks by Mr.B.Suresh reddy, Coordinator, LAC.

The meeting was documented using photo and video documentation.

List of Participants

Sl. No	Name of the Member	Sex	Name of the Village	Designation
1	Yellamma	F	Badampet	Sarpanch
2	Baswaraj Patil	M	Mamidigi	Farmer & LAC member
3	Laxman Naik	M	Upperpally Thanda	Farmer & LAC member
4	Bikamsingh Rathod	M	Gotigyarpally	Sarpanch
5	Anji Reddy	M	Boochinelly	Sarpanch
6	Srinivas	M	Yedakulapally	Sarpanch
7	Tukaram	M	Ranjhole	Sarpanch
8	David	M	Ippapally	Sarpanch
9	Yesappa	M	Basanthpur	Sarpanch
10	Sugunamma	F	Ibrahimpur	Sarpanch
11	Chendraiah	M	Khaleelpur	Sarpanch
12	Vishwanath patil	M	Kalbemul	Sarpanch
13	M. G. Ramulu	M	Huggelli	Sarpanch
14	Dasharath	M	Metalkunta	Sarpanch
15	Chendra Reddy	M	Gudupally	Sarpanch
16	Pomunaik	M	Vittunaik Thanda	Sarpanch
17	Eeshwaramma	M	Raipally - D	Sarpanch
18	Mukund Reddy	M	Rejinthal	Sarpanch
19	Anjaiah	M	Pagidigumma	Sarpanch
20	Mogulaiah	M	Pagidigumma	Farmer
21	Chandrakantha	M	Rejinthal	Farmer
22	Srinivas Patil	M	Rejinthal	Farmer
23	Rachaiah	M	Khanapur	Sarpanch
24	Ramulu	M	Sajjapur	Sarpanch
25	Ramchender	M	Gopenpally	Sarpanch
26	M. A. Mubeen	M	Asad Ganj	Sarpanch
27	Lalappa	M	Boordipad	Sarpanch
28	Chennamma	F	Chalki	Mandal President Nyalkal &LAC member
29	Rangamma	F	Chalki	Farmer
30	B. Rachamma	F	Kaveli	Sarpanch
31	Narsimulu	M	Kakkaravada	Sarpanch
32	Narsaiah	M	Pasthapur	Sarpanch
33	Suseelamma	F	Chinna Hyderabad	Sarpanch
34	Bujjamma	F	Chinna Hyderabad	Farmer
35	Panduranga Yadav	M	Chinna Hyderabad	Farmer
36	T. Ramulu	M	Mogudampally	Sarpanch
37	Baganna	M	Jadimalkapur	Farmer &LAC member
38	Siddapa	M	Gousabad	Sarpanch
39	Pakeeramma	F	Krishnapur	Sarpanch
40	B. Ram Reddy	M	Krishnapur	Farmer

41	Smt. Manemma	F	Bidakanne	Sarpanch
42	Eeshwaraiah	M	Bidakanne	Ex. Sarpanch
43	Baswaraj	M	Miriyampur	Sarpanch
44	Suseelamma	F	Boppanapally	Sarpanch
45	Yesaiah	M	Boppanapally	Farmer
46	Nagesh	M	Khasimpur	Sarpanch
47	Shyamaiah	M	Dhanwar	Sarpanch
48	Poshamma	F	Dhanwar	Farmer
49	Vittal Reddy	M	Maligi	Sarpanch
50	Babu	M	Hameerabad	Sarpanch
51	Mothi Ram	M	Zaheerabad - 10	Counciler
52	Nagendar	M	Shekapur Thanda	Farmer
53	Gundamma	F	Algole	Sarpanch
54	Anjaiah	M	Bardipur	Sarpanch
56	Sangameshwar	M	Potpally	Sarpanch
57	Swamy Das	M	Machnoor	Sarpanch
58	Babu Miya	M	Yelgoi	Sarpanch
59	P.V.Sateesh	M	DDS,Pastapur	Director, DDS
60	B.Suresh Reddy	M	DDS	Coordinator, LAC

SECTORAL MEETING OF AGRICULTURAL SCIENTISTS AS A PART OF THE DECCAN SUB STATE PLAN

DAATTC, SANGAREDDY, APRIL 16, 2001

Annexure - V

As a part of the NBSAP Sub State Plan for the Zaheerabad Region in the Deccan, Andhra Pradesh, a meeting of the agricultural scientists from the NG Ranga Agricultural University, Andhra Pradesh was held at the DAATTC (District Agricultural Advisory and Technology Transfer Centre), Medak District, Sanga Reddy on Monday, April 16, 2001.

The meeting was attended by the 12 senior scientists from the Acharya N G Ranga Agricultural University, the premiere agricultural university in AP. The list of scientists is at the end of this report.

Dr Govardhan Reddy, Scientist-in-charge, DAATTC which had convened the meeting welcomed the gathering.

Mr P V Satheesh, Director, Deccan Development Society introduced the NBSAP to the scientists. Underlining the growing understanding of the critical importance of biodiversity in agriculture as in other spheres of natural resources management, Mr Satheesh explained the role, structure and the process of NBSAP and requested the scientists to make a contribution to the development of the Deccan Sub State Plan on Agrobiodiversity.

Mr Suresh Reddy, Scientist, DDS Krishi Vigyan Kendra (Farm Science Centre) and the Convenor of the Deccan Sub State Plan explained the process that had taken place till now in developing the Deccan Sub State Plan.

The discussion began with a defence of the Green Revolution and the monocultures incorporated as an element in it. Some scientists felt that the answer to the burgeoning population and the need for producing food for this population depended on monocultures which were inevitable.

But soon the discussion started revolving around the importance ofbiodiversity in agriculture for a sustainable food production and conserving germplasms and environment. Simultaneously some of the problems posed by the Green Revolution to a sustainable agriculture came up.

Dr Raj Reddy took the example of Guttipadu in Guntur District in Andhra Pradesh which had raised intensive monocrops and after suffering its negative impacts had gone back to diversification of cropping into which had been brought a host of traditional crops. This was a model worth emulating, Dr Raj Reddy emphasised.

Dr Narayan Reddy agreed with him and pleaded for a consideration of diversity in time as well as in space. While farmers try to integrate diverse cropping systems in one season, in another season, they may not be able to do so and may practice monoculture. But their agriculture should be seen in totality and the diversity brought about in Time should be appreciated.

Dr Reddy was also critical of the government's role in ignoring the dryland farmers practice of agrodiversity in its policies. He took the example of the millet farmers in the Deccan region (an area of work in which he was involved for over a decade) and explained the grit with which farmers in Telangana and Maharashtra had continued to raise sorghum in the face of hostile and unsupportive state policies. But with unrelenting continuation of state policies they had to give in and take up other crops. If only the government had supported sorghum (whose market price used to be Re.one per kg) by introducing it in the PDS, the sorghum farmers would have continued to practice their special diverse farming (This PDS would have even been cheaper compared to the rice-wheat based PDS) and would have sustained agrodiversity on large tracts of farms (close to 60-65,000 hectares) in the Deccan.

Dr Loka Reddy, illustrating with his experience in Mahboobnagar District of AP where the farmers had to take up cotton cultivation abandoning their traditional sorghum farming, said that the farmers had been forced to do so with the full knowledge that their soils were not suitable for cotton farming because the government policies had let down sorghum farmers. Government policies should be such that it must "automatically promote diversity", Dr Reddy said.

Many scientists felt that these policies coupled with changing food habits and lifestyles as a result of the influence of media were creating an environment that was not conducive to the practice of diversity in agriculture. Many scientists severely blamed media for its role in propagating certain kind of foods to the exclusion of some other kinds, and creating a hierarchy of foods. Dr V Raja said that if he ate sorghum roti, knowing fully well its superior nutritious qualities, he will be looked down by other people as if he is an *uncivilised person.* This tendency had killed millet agriculture he said and emphasised the need to counter the popular media's perception of foods.

Many scientists regretted the fact that this artificial atmosphere had worked against poor who felt ashamed to eat cheaper, nutritious food and hankered after rice while the really nutritious millets had gone into select supermarkets and was being consumed by the elite.

Mr Suresh Reddy recounted his experience in Timmapur village of Narsapur Mandal in Medak District where he had conducted a seed mapping exercise with the local farmers. He was surprised to find that every one of the 200+ families in the village still preserved finger millet seeds. This reality, according to Mr Reddy gave the hope that we could still revive biodiversity in agriculture.

Dr Ramesh Babu outlined three important issues concerning agricultural biodiversity especially on dryland farms:

1. Geographical distribution of lands
2. Technology generation and transfer
3. Policy environment

Since the land available for cultivation was almost fixed, in terms of distribution, the size of holdings was getting smaller by the year. Therefore in such small holdings which were of the size of 0.5 ha., it was impossible for any new technology transfer. According to him the current technologies on such small holdings might have negative benefits.

On the other hand the Green Revolution had turned into Greed Revolution with little thought for soil and environment impacts and sustainability.

Therefore the current technology research must lay increased emphasis on intercropping and multicropping as well as bringing back many crops from the point of view of nutritional security. Simultaneously it was also very important to think about the ways to change the set food habits of people and steer them back to the advantages of millet-based food system.

Dr Babu was also of the view that GM crops which was entering the area of agricultural research could affect agro biodiversity.

Dr Narayan Reddy agreed with this prognosis and was of the categorical view that since India had stabilised our food needs, it did need any gene revolution in the area of food production. Such a gene revolution will not allow co evolution of several species since the pressure of selection process will have an adverse effect on biodiversity.

After three hours of intense discussion, the scientists came up with a set of recommendations:

- *In the Deccan area biodiversity in agriculture can be preserved and enhanced if the government introduced millets in the PDS system. Therefore it is essential for the government to change its two cereal based PDS policies and bring sorghum and millets into the PDS system so that millet farmers get an assured market and save the diversity in their farming system. This will also enhance the nutritional security of the poorer section of consumers who are the recipients of the PDS.*

- *Media should play a positive role towards millets as foods and stress the importance of millets and sorghum as highly nutritious sources of food.*

- *In order to make the sorghum and millet based biodiverse farming system more economical government must establish rural industries which can add value to these crops. Farmers use a part of their sorghum produce for their own food consumption, and sell the surplus to the market as food grain. Part of this*

surplus can be value-added by converting it to industrial use like production alcohol, starch etc which will bring good returns for farmers.

- *Since many millets suffer from the problem of processing, small rural processing need to be established. For eg. dehusking mills for foxtail millet and little millet can dramatically increase their consumption in rural areas since women find hand-pounding of these grains very difficult. Similarly processing machines who can make ravva out of sorghum can also increase the shelf life and acceptability of sorghum for conscious urban consumers.*

- *Ready to eat foods and items like papads made out of millets and sorghum should be popularised. This will improve the markets for these crops and in turn enhance the diversity on farms.*

- *Agricultural research must work closely towards systems approach in farming. It should have two strong foci:*
  a. Value Addition
  b. Low or no-external input agriculture

- *Gene technology must be directed towards abiotic stresses without harming agricultural ecosystem.*

- *Research components for biodiversity at the state and the national level should be increased. Any technology which harms diversity should be discouraged.*

- *A large scale effort should be made to collect and conserve traditional cultivars at the village level. This must receive a big support from the government. In situ conservation is as important as ex situ conservation and both must go hand in hand.*

- *The current Neeru-Meeru programme of the Andhra Pradesh government is a welcome revival of the centuries old village community effort at desilting village tanks and improving the soil fertility on uplands. This component of the programme viz., desilting of tanks and silt application on the uplands must receive maximum attention of the government for the next five years. If this happens, dryland agriculture and the biodiversity inherent in this agriculture will get a big boost.*

A film on the Mobile Biodiversity Festival conducted by the Deccan Development Society as a part of the NBSAP process was exhibited to the scientists.

List of scientists who attended the meeting

Sl.No	***Name of the scientist***	***Designation***
1	Dr. ALN Prasad	Scientist, Plant Physiology Fruit research station, Sangareddy
2.	Dr. T. Dayakar Reddy	Scientist (Breeding) Rice Section, Agriculture Research Station Rajendra Nagar , Hyderabad.
3.	Dr. K. Loka Reddy	Assistant Professor Department of Entomology, College of Agriculture, Rajendra nagar, Hyderabad-30 phone - Residence No: 4534657 , Office No: 4015161 ext :377
4.	Dr. V. Raja	Senior Scientist Agricultural Research Station Amberpet, Hyderabad-13. Phone:- Office No: 7038498, 7034165 Residence No: 3831549
5.	K. Ravinder Reddy	Scientist (Horticultural) Agricultural Research Institute Rajendra Nagar, Hyderabad-30 Phone- 4018016
6.	Dr. T. Ramesh Babu	Senior Scientist (Entomology) AICRP on Pesticide Residues ANGRAU , Rajendra nagar, Hyderabad-30 Phone - Residence No: 3511900 Email: tatinenir@Yahoo.com
7.	Dr. D. Raji Reddy	Senior Scientist (Agro meteorology) Agro meteorology cell, Agriculture Research Institute Rajendranagar, Hyderabad-30 Phone: - Office No: 4016901 Residence No: 7170111
8.	Dr. K. Jegdishwar	Senior Scientist (Sunflower Breeding) NSP , ANGRAU , Hyderabad-30

9.	Dr. P. Narayan Reddy	Associate Professor Department of plant pathology College of agriculture, Rajendra Nagar Phone No: 3026462 Email: Unarayan2000@Yahoo.com
10.	Dr. I. Prabhakar Reddy	Senior Scientist (Horticulture)& Head: Vegetable Research *Agriculture Research Institute* Rajendranagar, Hyderabad-30 Phone- Office No: 4018016 Residence No: 3716037
11.	Dr. V. ShashiBushan	Senior Scientist (Entomology) DAATTC, ANGRAU, Sangareddy, Medak Dt.. Email: Shashibhushanv@hotmail.com Email: Sasibusan@yahoo.com
12.	**Dr.Govind reddy**	**Senior scientist & coordinator** **DAATTC** **Sanga reddy** **Medak district.**

SECTORAL MEETING OF N.G.Os NAVAJYOTHI AND ROAD AS A PART OF THE DECCAN SUB STATE PLAN

RAMAYAMPET, MEDAK DISTRICT, APRIL 23, 2001

Annexure - VI

The NBSAP sectoral meeting under the leadership of N.G.Os NAVAJYOTHI and ROAD was organised at Ramayampet on 23-4-01 at the Navajyothi Training Centre, Ramayampet. More than fifty farmers from 8 villages from Narsapur and Ramayampet attended the meeting. Out of 50 participants, twenty were women.

Manohar Rao, Director, Navajyothi, welcomed the farmers. Poshadri represented the Ikyasamithi, an N.G.O working in the region. Mr.Suresh Reddy, Coordinator (Agrobiodiversity) introduced the purpose behind the NBSAP, and requested farmers' inputs into the strategy and planning for agrobiodiversity in the Zaheerabad region of Deccan. The following issues were raised, and the following suggestions were offered by farmers to help conserve agrobiodiversity in the region.

- We used to grow crops like taidalu (Finger millet), Samalu (little millet),Korralu (Foxtail millet) and Vulvalu (Horse gram). "Ippudu pani shanni kochhindi"(Nowadays, people have become "modern" and are not interested in growing such crops, says a farmer sarcastically). My son is not as strong as I. Now the desire to earn more money is on the increase.
- Now there are no cattle, and no place for grazing cattle. Previously we used to use tank silt. That healthy practice is no longer followed.
- Previously we used to mix leaves of pongamia and billa gorsha into the soil on our fields. This used to improve the fertility of the soil.
- Healthy agricultural practices such as the application of fertilisers, tank silt the and incorporation of green manuring plants into the soil, are not seen these days.
- We should be given support for cattle and for milch animals. This will help provide Farm Yard Manure and improvement of soil fertility can be achieved by applying this manure.
- The present generation has no patience to grow traditional crops.
- We killed our soil by applying chemicals to it.
- The Government should take measures to create awareness among farmers about the hazards of chemical agriculture.
- The Government should not give pattas to shikam bhoomi, which reduces the grazing area in the villages.
- The Government should stop distributing rice, and instead, should provide other crops like taidalu, pesarlu, and minumulu.
- Seeds supplied by the Government through block offices are not yielding well and we should stop using them and start storing and using our own seeds.
- Traditional crops should fetch a good price.

- “Ippudu pettuvadi ekkuvavu thunnadi, puttuvadi thakkuvavu thunnadi.”(Now the cost of inputs is increasing, but the yield is decreasing).
- The Government should close down pesticide companies.
- The government has habituated us to the use of chemicals, monocultures and pesticides, and now you ask us for solutions to overcome the problems arising out of the practices followed by the Government.
- We should slowly reduce the use of chemical fertilisers and increasingly use organic fertilisers.
- The Government should encourage trees which help provide green manute.
- Previously we used to find Burka peddalu (Vermicastings) in the fields, but now due to the application of phosphate granules, earthworms are being destroyed, and we don’t see much of these burka peddallu.
- The government should provide the common lands available for grazing of cattle.
- The government should ban chemical fertilisers.

The meeting concluded with a vote of thanks by Mr.B.Suresh Reddy, Coordinator, (Agro-biodiversity).

The meeting was documented using photo and video documentation.

List of Participants

1	Mr N. Narsaiah	Venkatraopet	Farmer
2	Mr K. Bakkaiah	Venkatraopet	Farmer
3	Mr K. Balamolla	Venkatraopet	Farmer
4	Mr Pandi Chendraiah	Venkatraopet	Farmer
5	Mr Yadaiah	Venkatraopet	Farmer
6	Mr Balaiah	Venkatraopet	Farmer
7	Mr Kanakaiah	Venkatraopet	Farmer
8	Mr Sattaiah	Venkatraopet	Farmer
9	Mr Malleshsam	Venkatraopet	Farmer
10	Mr Venkataiah	Venkatraopet	Farmer
11	Mr N. Narsimulu	Venkatraopet	Farmer
12	Mr B Mallesham	Venkatraopet	Farmer
13	Mr adava Reddy	Lingapur	Farmer
14	Mr R.Y.Gangadhar Rao	Narsapur	Representative of ROAD
15	Ms Jayamma	Narsapur	Representative of ROAD
16	Ms Pentamma	Thimmapur	Farmer
17	Ms Chendramma	Thimmapur	Farmer
18	Ms K. Padma	Gottimarla	Farmer
19	Ms Hussain Bee	Gottimarla	Farmer
20	Ms Jaheerabee	Gottimarla	Farmer
21	Ms Pushpa	Hanmanthpur	Farmer
22	Ms Suguna	Mahammadabad	Farmer
23	Ms Tara	Jaggethanda	Farmer
24	Ms Lingamma	Reddypally	Farmer
25	Ms Poshamma	Reddypally	Farmer
26	Ms Mallamma	Hanmanthpur	Farmer
27	Ms Yadamma	Gottimarla	Farmer
28	Ms Gangamma	Tuniki	Farmer
29	Ms Sayamma	Tuniki	Farmer
30	Ms Shivamma	Tuniki	Farmer
31	Mr M. Balraj	Natyampally	Farmer
32	Ms P. Salman bee	Natyampally	Farmer
33	Mr D. Manohar Rao	Ramayampet	Navajyothi Chairman
34	Mr B. Poshadri	Narsingh	Representative of IKYASAMITHI
35	Mr G. Malla Reddy	Ramayampet	Coordinator,Navajyothi.
36	Mr D. Shankar	Ramayampet	Farmer
37	Mr M. Swamy	Shivanoor	Farmer
38	Mr M. Yadagiri	Ramayampet	Coordinator,Navajyothi.
39	Mr M.Thirupathi Reddy	Kamgal	Farmer
40	Mr G. Mahankali	Narsingh	Farmer
41	Mr D. Harikrishna	Narsingh	Farmer
42	Mr Yohan	Mirdoddi	Farmer
43	Mr Gunnala Ramulu	Mirdoddi	Farmer
44	Mr Tokila Kistareddy	Mirdoddi	Farmer

45	Mr K. Bapu Reddy	Mirdoddi	Farmer
46	Mr Sana Kistaiah	Mirdoddi	Farmer
47	Mr Pedda Anjaiah	Mirdoddi	Farmer
48	Mr K. Anjaiah	Mirdoddi	Farmer
49	Mr G Bikshapathi	Mirdoddi	Farmer
50	Mr M.Thiruvanth Reddy	Angal	Farmer
51	M. Deshi Reddy	Angal	Farmer
52	B. Suresh Reddy	DDS-Pasthapur	Coordinator LAC

SECTORAL MEETING OF FOREST DEPARTMENT AS A PART OF THE DECCAN SUB STATE PLAN

OFFICE OF THE FOREST DEPARTMENT, ZAHEERABAD, APRIL 24, 2001

Annexure - VII

The NBSAP sectoral meeting was organised on 24-4-01 at the office of the Forest Department, Zaheerabad. More than eighty farmers from 9 villages around Zaheerabad attended the meeting. Out of the 80 participants, twenty were women.

Mr.Srikanth Rao, Section Officer, Forest Department, welcomed the farmers from different Van Samarakshana Samithis. Mr.Suresh Reddy, Coordinator (Agrobiodiversity) explained the purpose behind NBSAP, and requested farmers to help formulate strategies for agrobiodiversity in the Zaheerabad region of the Deccan. The following issues were raised, and suggestions offered, by the farmers to conserve agrobiodiversity in the region.

- Traditional crops will not yield when chemical fertilisers are applied, while they respond well when farmyard manure is applied.
- Support for cattle is needed to improve the availability of farmyard manure.
- The present generation is extremely impatient.
- Forests are destroyed because of rise in population. As a result, cattle have no place where they can graze. The farmers are thus forced to sell them off. Without cattle, the availability of farmyard manure is reduced, leading to the decreased area under cultivation of traditional crops. .
- Forests must be reclaimed because they bring rain and good harvests.
- To grow traditional crops, farmers should get support with regard to farmyard manure, cattle and weeding.
- Traditional crops should have a minimum rate of Rs.1000 per quintal.
- The average land-holding has drastically decreased, so it is becoming uneconomical to cultivate the lands.
- Previously, people in the villages used to consume a variety of uncultivated greens, which kept them strong and healthy, but now their consumption is reduced.
- The planting of eucalyptus has reduced the moisture availability in the places where it is planted.
- The government should support farmers with the digging of bore wells.
- These days, the rainy season does not stay for full four months.

Finally, the meeting ended with a vote of thanks by Mr.B.Suresh Reddy.

The meeting was documented using photo and video documentation.

List of Participants

Sl. No	Name of the Member	Name of the Village	Designation
1	Mr Poolsingh	Padiyal Thanda	Farmer
2	Mr Harisingh	Padiyal Thanda	Farmer
3	Mr Ramulunaik	Padiyal Thanda	Farmer
4	Mr Lalu	Padiyal Thanda	Farmer
5	Mr Devla	Padiyal Thanda	Farmer
6	Mr Chaplanaik	Padiyal Thanda	Farmer
7	Mr Samuel	Padiyal Thanda	Farmer
8	Mr Homunaik	Vittunaik Thanda	Farmer
9	Mr Dakunaik	Padiyal Thanda	Farmer
10	Ms Kistabai	Padiyal Thanda	Farmer
11	Ms Jaminibai	Padiyal Thanda	Farmer
12	Ms Jamkibai	Padiyal Thanda	Farmer
13	Ms Keslibai	Padiyal Thanda	Farmer
14	Ms Hirkibai	Padiyal Thanda	Farmer
15	Mr Prabhu	Padiyal Thanda	Farmer
16	Mr Kistaiah	Parshapalli	Farmer
17	Mr M. Jaipal	Parshapalli	Farmer
18	Mr Satyaraju	Parshapalli	Farmer
19	Mr Mogulaiah	Parshapalli	Farmer
20	Mr Jairaj	Parshapalli	Farmer
21	Ms Mariyamma	Parshapalli	Farmer
22	Ms Suseelamma	Parshapalli	Farmer
23	Ms Sujatha	Parshapalli	Farmer
24	Ms Rachamma	Parshapalli	Farmer
25	Ms Santhoshamma	Parshapalli	Farmer
26	Ms Anjamma	Parshapalli	Farmer
27	Ms Satyamma	Parshapalli	Farmer
28	Ms M.Shyamalamma	Parshapalli	Farmer
29	Ms C. Anjamma	Parshapalli	Farmer
30	Ms M. Swaroopamma	Parshapalli	Farmer
31	Mr Rachaiah	Parshapalli	Farmer
32	Mr M. Manaiah	Parshapalli	Farmer
33	Mr C. Jagan	Parshapalli	Farmer
34	Mr Shankar	Badampet	Farmer
35	Mr C. Rachanna	Badampet	Farmer
36	Mr R. Bakkanna	Badampet	Farmer
37	Mr D. Bheemappa	Badampet	Farmer
38	Ms R. Govindamma	Badampet	Farmer
39	Ms G. Bichamma	Badampet	Farmer
40	Mr Maschender	Badampet	Farmer
41	Mr S. Rachaiah	Badampet	Farmer
42	Mr R. Shekar	Badampet	Farmer

43	Mr Ramesh	Badampet	Farmer
44	Mr Malla Reddy	Gotigarpally	Farmer
45	Mr Nagappa	Gotigarpally	Farmer
46	Mr Papaiah	Gotigarpally	Farmer
47	Mr Ratnaiah	Gotigarpally	Farmer
48	Mr Ramchender	Gotigarpally	Farmer
49	Mr Narsimulu	Gotigarpally	Farmer
50	Mr Laxmappa	Gotigarpally	Farmer
51	Mr Vittalnaik	Gopinaik Thanda	Farmer
52	Mr Dharmunaik	Gopinaik Thanda	Farmer
53	Mr Ralvanaik	Gopinaik Thanda	Farmer
54	Mr Ravinder	Gopinaik Thanda	Farmer
55	Ms Gaminibai	Gopinaik Thanda	Farmer
56	Ms Jhamkibai	Gopinaik Thanda	Farmer
57	Ms Goribai	Gopinaik Thanda	Farmer
58	Ms Elise	Gopinaik Thanda	Farmer
59	Mr Madhukar	Gopinaik Thanda	Farmer
60	Mr Gundenaik	Gopinaik Thanda	Farmer
61	Mr Pandunaik	Siddapur Thanda	Farmer
62	Mr Lashkarsingh	Siddapur Thanda	Farmer
63	Mr Ramshetti	Siddapur Thanda	Farmer
64	Mr Hanmanthu	Siddapur Thanda	Farmer
65	Mr Bheemsingh	Siddapur Thanda	Farmer
66	Mr Poolsingh	Siddapur Thanda	Farmer
67	Mr Mallaiah	Thumkunta	Farmer
68	Mr Devaiah	Thumkunta	Farmer
69	Mr Laxmaiah	Thumkunta	Farmer
70	Mr Balappa	Thumkunta	Farmer
71	Mr Maschender	Thumkunta	Farmer
72	Mr Mogulaiah	Thumkunta	Farmer
73	Mr K. Thukaram	Bidakanne	Farmer
74	Mr B. Ramulu	Bidakanne	Farmer
75	Mr Aagamaiah	Bidakanne	Farmer
76	Mr Manikyam	Bidakanne	Farmer
77	Mr Jairaj	Bidakanne	Farmer
78	Mr Shaikh Abdul	Zaheerabad	FBO
79	Mr Ramulu	Sajjapur	FBO
80	Mr M. Manohar	Peecheragadi	FBO
81	Mr G. Amarender	Huselli	FBO
82	Mr Padmanaban	Gotigarpally	FBO
83	Mr D. Srikanth Rao	Zaheerabad	Forest Section Officer
84	Mr N. Raghavulu	Koheer	Forest Section Officer
85	Mr K. Krishna		Senior Asst.
86	Mr G. Ambaiah	Zaheerabad	Junior Asst.
87	Mr Habeeb Ali	Zaheerabad	Attender
88	Mr Maruthi	Shamshalapur	Farmer

89	Mr Narsappa	Shamshalapur	Farmer
90	Mr Gundaiah	Shamshalapur	Farmer
91	Mr Laxman	Shamshalapur	Farmer
92	Mr Nagappa	Shamshalapur	Farmer
93	Mr D. Balram	Zaheerabad	FBO
94	Mr B. Suresh Reddy	DDS - Pasthapur	Coordinator, LAC(Agro-biodiversity)

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95	Mr K.Sampath Kumar	Kalbemal	Field assistant, DDS-KVK

Annexure - VII

AGRICULTURAL BIODIVERSITY IN ZAHEERABAD REGION OF DECCAN AREA.

S.No	Loc	Diversity		me
	Kharif			
1	Aallu/aarkalu	1	Kodo millet	***Paspalum scrobiculatum***
2	Kodi saamalu	1	Proso millet	***Panicum milliaceum***
3	Saamalu	1	Little millet	***Panicum milliare***
4	Thaidalu	1	Finger millet	***Eleusine coracana***
5	Sajjalu	2	Pearl millet	***Pennisettum typhoideum***
6	Minumulu • Desi Minumulu • Sarkar minumulu • Nunupu minumulu	3	Black gram	***Vigna mungo***
7	Anumulu • Tella Anumulu • Nalla Anumulu • Erra Anumulu	3	Field bean	***Dolichos lablab***
8	Voma	1	Bishop's weed	***Trachyspermum ammi***
9	Nuvvulu • Manchi Nuvvulu • Nalla nuvvulu • Jamal nuvvulu	3	Sesame	***Sesamum indicum***
10	Gaddi Nuvvulu	1	Wild sesame/Niger	***Guizotia abyssinica***
11	Jonnalu • Thoka Jonna [loose earheaded] • Yerra Jonna [red variety]	7	Sorghum/Jowar	***Sorghum vulgare***

	• Maldandi Jonna • Gundu Jonna compact earheaded] • Tella malle Jonna [white variety, kharif] • Gareeb Jonna/Kakimuttani jonna [poor people's jonna] • Atta kodanla jonna			
12	Pesarlu • Sundari Pesari • Baalinta Pesari • Kidki Pesari • Theega Pesari • Baandari Pesari • Manchi Pesari • Pirki Pesari • Neelala Pesari	8	Green gram	***Vigna aureus***
13	Korralu • Tella Korralu [white] • Yerra Korralu [red] • Nalla korralu [Black] • Manchu Korralu [Grows using dew]	4	Foxtail millet	***Setaria italica***
14	Pundlu • Tella Pundi [white] • Yerra pundi [red] • Nalla pundi [Black]	3	Mesta	***Hibiscus cannabinus***
15	Vulvalu • Tella Vulvalu [white] • Yerra Vulvalu [red] • Nalla Vulvalu [black] • Burkha Saaralu [brown]	4	Horsegram	***Dolichos biflorus***
16	Vadlu/vari • Porka Vadlu • Yerra Vadlu [red] • Nalla Vadlu [black] • Tella Vadlu [white] • Doddu budda Vadlu [bold one]	5	Dry Sown Paddy	***Oryza sativum***
17	Baimugu • China Baimugu [small] • Pedda Baimugu [big]	2	Ground nut/Peanut	***Arachis hypogea***
18	Thogarlu	4	Redgram /	***Cajanus cajan***

	• Tella Thogari [white] • Yerra Thogari [red] • Nalla Thogari [black variety] • Burka Thogari [spotted variety]		pigeonpea	
19	Janumu	1	Sunhemp	***Crotalaria juncea***
20	Aamudamu	1	Castor	***Ricinus communis***
21	Cheruku • Tella cheruku • Bodhan cheruku	2	Sugar cane	***Saccharum officianarum***
22	Allam • Jowari Allam • Kerala Allam	2	Ginger	***Zingiber officianalis***
23	Pasupu • Chinna pasupu • Pedda pasupu	2	Turmeric	***Curcuma longa***
24	Nalla kusuma	1	Sunflower	***Helianthus annuus***
25	Aalugadda	1	Potato	***Solanum tuberosum***
26	Bebbarlu • Tella bebbarlu • Erra bebbarlu	2	Cow pea	***Vigna sinensis***
	Rabi			
1	Jonnalu • Thoka Jonna [loose earheaded] • Yerra Jonna [red variety] • Pyalala Jonna • Gundu Jonna compact earheaded] • Dhotianchu Jonna	5	Sorghum/Jowar	***Sorghum vulgare***
2	Shenigalu • Tella Shenigalu • Nalla Shenigalu • Deshi/yerra Shenigalu • Gulabi / doddu Shenigalu	4	Bengal gram	***Cicer arietinum***
3	Godhumalu • Neella Godhumalu • Tella mullu Godhumalu • Budda Godhumalu • Katte Godhumalu • Nalla Mullu Godhumalu • Dhouthu Godhumalu	6	Wheat	***Triticum vulgare***
4	Batagaallu	3	Green peas	***Pisum sativum***

	• Pachha Batagaallu • Nalla atagaallu • Tella Batagaallu			
5	Mirapa • Doddu Mirapa • Sanna Mirapa	2	Chilli	***Capsicum annum***
6	Vulli	1	Onion	***Allium cepa***
7	Dhaniya	1	Coriander	***Coriandrum sativum***
8	Aavaalu • Sannam Avalu • Doddu Avalu • Paccha Avalu	3	Mustard	***Brassica nigra***
9	Dosa	1	Cucumber	***Cucumis sativus***
10	Avishalu	1	Linseed	***Linum usitassimum***
11	Sirushenigalu • Chinna sirisenigalu • Pedda sirisenigalu	2	Lentil	***Lens esculentus***
12	Yavvalu	1	Oats	***Avena sativus***
13	Lankalu	1	Lathyrus	***Lathyrus sativus***
14	Kusumalu	1	Safflower	***Carthamus tinctorius***

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LIST OF THREATENED AGRICULTURAL CROPS AND VARIETIES IN ZAHEERABAD REGION OF DECCAN AREA

Annexure - IX

S.No	Local Name	No of Varieties under threat	Common Name	Scientific Name
	Kharif			
1	Aallu/aarkalu	1	Kodo millet	***Paspalum scrobiculatum***
2	Kodi saamalu	1	Proso millet	***Panicum milliaceum***
3	Saamalu	1	Little millet	***Panicum milliare***
4	Thaidalu	1	Finger millet	***Eleusine coracana***
5	Minumulu • Nunupu minumu	1	Black gram	***Vigna mungo***
6	Jonnalu • Yerra Jonna [red variety] • Tella malle Jonna [white variety, kharif] • Gareeb Jonna/Kakimuttani jonna [poor people's jonna]	3	Sorghum/Jowar	***Sorghum vulgare***
7	Pesarlu • Sundari Pesari • Baalinta Pesari • Theega Pesari • Baandari Pesari • Manchi Pesari	5	Green gram	***Vigna aureus***
8	Korralu • Tella Korralu [white] • Yerra Korralu [red] • Nalla Korralu [Black] • Manchu Korralu [Lives of on dew]	4	Foxtail millet	***Setaria italica***

9	Vulvalu • Tella Vulvalu [white] • Yerra Vulvalu [red] • Nalla Vulvalu [black] • Burkha Saaralu [brown]	4	Horsegram	***Dolichos biflorus***
10	Vadlu/vari • Porka Vadlu • Yerra Vadlu [red] • Nalla Vadlu [black] • Tella Vadlu [white] • Doddu budda Vadlu [bold one]	5	Paddy	***Oryza sativum***
11	Baimugu • Pedda Baimugu [big]	1	Ground nut/Peanut	***Arachis hypogea***
12	Thogarlu • Burka Thogari [spotted variety] • Nalla togari	2	Redgram / pigeonpea	***Cajanus cajan***
13	Cheruku • Tella cheruku	1	Sugar cane	***Saccharum officinarum***
	Rabi			
1	Jonnalu • Yerra Jonna [red variety] • Pyalala Jonna • Dhotianchu Jonna	3	Sorghum/Jowar	***Sorghum vulgare***
2	Shenigalu • Nalla Shenigalu	1	Bengal gram	***Cicer arietinum***
3	Godhumalu • Tella mullu Godhumalu • Budda Godhumalu • Nalla Mullu Godhumalu	3	Wheat	***Triticum vulgare***
4	Batagaallu • Nalla atagaallu • Yerra Batagaallu	2	Green peas	***Pisum sativum***