

Reports

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THE DOCUMENT

This document contains selected reports, published and unpublished articles. This document gives a brief idea about my work and evolution of thoughts on the issue of genetic resources.

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CONTENTS :

- 1.00 First two reports : Two yeass of Environmental Activism and Six years as Environment Activist gives the personal background. This is an attempt of self evaluation, trying to look back at the role as an activist. These two reports provide an insight into the evolution of ideas, how I performed my role at grassroots and its relevance.
- 2.00 The paper 'Bio Diversity Conservation Project' gives an idea of the work I am involved at present as a Co-ordinator of this project. It provides detail description of the activities we are involved in conservation of biodiversity in the tropical region. At present this programme is implemented with assistance from Navdanya ( a NGO), Delhi. The write up 'Threat to Bio Diversity in tropical Ecosystem' is the article based on the experience of the bio-diversity project.
- 3.00 There are five brief reports on Save Honey Bee Campaign. These reports give a brief idea on the issue of conservation indigenous honey bees and dangers involved in introduction of exotic honey bees.
- 4.00 The published and unpublished articles are on following issues:
- India / Erosion of Genetic Diversity
  - From Green Revolution to Gene Revolution
  - Bio Technology in Agriculture - The Policy Options for India
  - The Genetic Imperialism in Biotechnology
  - Biodiversity for profit.
  - Widening gap between Agriculture and Forestry
  - Case study - Healthy Farm in Tropics.
- 5.00 These are two detail analytical reports on the state of biodiversity of forest resources in the central Indian region of Bastar and Wynad in Kerala. This is linked to how the indigenous forest dwellers perceive the destruction of diversity as a threat to their survival.
- Wynad : From sustainable to destructive forestry
  - People's Movement in Bastar
- 6.00 The last report is an article published by News from Fields and Slums (NFS) on the drought in the deserts of Rajasthan.

## TWO YEARS OF ENVIRONMENTAL ACTIVISM

### 1.00 INTRODUCTION

This report is an attempt of self-evaluation, trying to review my work. In January 1983 I decided to work on environmental issues in Karnataka and particularly on western ghats. In the same year Chipko (Appiko) Movement was launched in South India, since then, I have been working as environmental activist. This report pertains to my experiences from Jan 1983 to Feb 1985. I have tried to put down my success and failures in regard to grass root ecological movement and relate it to overall ecological scene in the country. This is an exercise carried with utmost objectivity, so as to invite critical comments and suggestions.

### 2.00 BACKGROUND

- 2.1 While studying for post graduation in Delhi School of Social work, University of Delhi, I came in contact with the Chipko leader Sunderlal Bahuguna. I went to Garhwal to participate in Chipko Movement. This was part of my post graduation studies. In 1979 I completed my post-graduation securing first class first. Equipped with this I joined the employment market. But I decided to work in rural areas on rural development issues. This brought me to Damoh district in Madhya Pradesh. I joined Gramen Shramik Kendra, Damoh, a voluntary Organisation.
- 2.2 The main work in Damoh centered around landless labourers, trying to build their organisation so that they are capable of fighting for their rights. We achieved success in some vil ages but failed to make a larger impact. Very often the district suffered from acute drought. In such situation we believed (as many Rural Development Programmes do) that once certain class of people, especially those who are weak in Society get organised, they will be able to tackle the problem of poverty. Infact the idea is: POWER in Society

should come to weakest and the economic justice will follow. But, what about regular occurrence of drought, which will drive the people to severe hardship? The organised groups of labourers fought with government agencies for food for work programmes. These never reduced the famines. We were engaged in tackling the symptoms rather than root cause of disease. Here I felt there is urgent need to look at rural poverty and development in a total perspective. The depletion of natural resources and erosion of genetic diversity is a major cause of poverty in this region. This has papurised tribal people.

- 2.3 After working for 3 years in rural areas of Madhya Pradesh, I felt that there is a limit to the role of an outsider I learnt the local dialect Bundeli and established rapport with villagers. However, my understanding of local cultural ethos was very limited. Damoh programme had a clear perception of organising poor people but we could never reach the heart of local people, with whom we wanted to work. Thus I decided that local youth should replace us to run the voluntary organisation. With these ideas I left Damoh by December 1982 to return to my native place in Karnataka.
- 2.4 In Dec. 1982 I joined Sunderlal Bahuguna in Kashmir Kohima Chipko Foot March, we walked together in Bhutan traversing difficult terrain. I discussed with him regarding my plan to work on environmental issues in Karnataka. I learnt the usefulness of PADAYATRA in communicating the message of Chipko. We also learnt many things from the farmers situated in the remote villages of Bhutan. Bhutan represents a region where genetic diversity is the base for prosperity and well-being of people.
- 2.5 I arrived in Bangalore during first week of January 1983, I had a vague idea of my future plan, but I knew it will be on the problems related to forest and people. First 2 months were spent in Bangalore contacting people who worked or were working on Western Ghats. Discussions were held with like minded people. It was difficult for people to understand my ideas of working voluntarily without any support from organisations. I had no financial support and my plan was to earn money through free lancing. My friends expressed doubts about this adventure, (misadventure!). To overcome the discouragement I thought of

"down to earth" programme. I planned to walk from Karwar along the banks of river Kali to its origin near Goa.

### 3.00 EKLA-CHALO-WALKING ALONE

- 3.1 Karwar is the headquarter of Uttara Kannada district. It is a coastal town famous for its natural beaches. A caustic Soda Factory is set up at Binaga 6 Kms from Karwar. I met fishermen who suffered from the affluents of Caustic Soda Factory. This factory employes about 800 people and has displaced about 10 thousand people, mainly fishermen.
- 3.2 I started my Foot March from Karwar along the banks of river Kali. I talked to villagers, stayed with them and in the end reached the origin of river at Diggi Ghat. This walk provides an overview of the so called development carried in the district. Uttara Kannada with 81 percent of its area under forest is regarded as backward district. And there came 3 'P's to erradicate its backwardness. First to come was Plywood Factory with an intention of exploiting forest wealth. The second 'P' was paper, the West Coast Paper Mill was established to exploit bamboo from forest. The third 'P' which is a recent addition is POWER. Hydro Electric Dams are to be constructed across Kali. I saw the main Dam coming up at Supa, which had displaced 47 villages. They have been rehabilitated in the catchment area of Kali, after clear felling about 10,000 acre of Virgin forest !! The lovely river Kali is dead. The affluents left by Paper Mill has killed the living river. The three 'P' mentioned above came to remove backwardness but in the process has ruined the balance of Nature. From 1950 to 1980 the area under forests has come down from 81 percent to 25 percent. The paper and Plywood factory employes 40,000 workers but it has jeopardized lives of 7 lakh people in the district affecting the living pattern. At macro level it affected the rainfall pattern in the deccan plateau. The most shocking experience was at the (birth) origin of Kali. The small stream flows from thick forests near Diggi village. But many other streams which join together and become Kali is totally dry. The whole area is full of derbis and rejects of open cast mining. The mining activity has led to drying up of the streams.

3.3 The lone walk gave an indepth exposure of so called development programmes. The natural resources is utilised in a manner that it endangered the lives of local & inhabitants. The renewable resources like forest is converted into non renewable resource. This has had serious consequences on the lives of poor people. Mining of manganese ore has earned foreign exchange and big hydel dams have generated power. But in the process the poorest group had to loose control over its land and forced to a state of destitution. While walking in the thick tropical forests I learnt how the forest dwellers utilise available genetic resources for their every day living. The plight of uprooted people strengthened my determination to work for the cause.

3.4 I returned to my native village in Sirsi taluka Uttara Kannada district. The personal trauma was difficult to bear. My experiences and anguish pushing me towards some kind of action. But I was totally bankrupt, without ideas and money. It was during this time, Sunderlal Bahuguna visited Sirsi. Youth groups from Balegadde and Gubbigadde invited Bahuguna to their village. They wanted to protest forest which was marked for felling. We never knew that the same village people were going to launch (Chipko) Appiko Chalavali and we had no idea that the awareness is going to spread all through the state.

#### 4.0 APPIKO MOVEMENT IN SOUTH INDIA

4.1 On 8th September 1983, Young men and women launched Appiko Chalavali in Kalase Forest near Salkani village, in Sirsi taluka, Uttara Kannada district. There were no leaders, no slogans. The people went and embraced the trees which were being axed by labourers. I came to know of this only after few days through local news papers. There-after I reached Kalase Forest and toured the villages. With enough knowledge of local politics I came to know of petty politicians trying to make capital out of Appiko. At this point I entered the scene and started giving direction towards a political and constructive goal. By December 1983, the movement spread to 11 forest areas in Sirsi and Siddapur Taluka. In 1984 it started

in Sagar taluka, Shimoga District. By 1985 Appiko has taken deep roots in three districts, Uttara Kannada, Shimoga and Dakshina Kannada.

4.2 The most important reason for spreading of this movement is the Forest policy. The main objective of forest management is to provide raw material to forest based industries and to earn maximum revenue. To attain this, natural forests were clear felled on large scale to make way for commercial mono-culture plantations of teak and eucalyptus. The policy was; to destroy diversity for the sake of earning revenue for the state. This created changes in micro and macro climate affecting rainfall and eventually agricultur~~s~~. The forests policy ignored the difficulties of people and claimed that they are following "scientific forestry practices". This so called scientific forestry depleted the natural forests and they turned this renewable resource into non-renewable resource. People who survived on this resource were affected severely. The resistanc~~e~~ and pent up feelings developed among people against forest policy. This sub conscious feeling is present in hilly forest areas. Appiko became a medium of expressing these feelings, sufferings of ordinary people.

#### 4.3 Suppressing Appiko

The common people challenged the so called 'scientific forestry'. This is threat to the authority of bureaucrats. In order to suppress peoples movement the highest forest official declared that Appiko is un-scientific. The second allegation is that this movement is against development. They also tried to malign the people voice saying that it is politically motivated. In spite of all these efforts the movement became stronger and it spread to many forest areas. The forest department used a famous Environmental Scientists to write articles against people's movement. Perhaps these experts on western ghats did not like people taking direct action.

#### Constructive Approach...

4.4 Appiko started spontaneously in many places due to anti people forest policy. The basic instinct was negative. In order to bring positive element, the mass awakening was channalised into

afforestation and in minimising the utilisation of forest resource. Village youth collected seeds from the forest and started their own nurseries. They planted saplings on barren land. In addition to this the activists started propagating ASTRA OLE (Chullah or Wood Stove), Gobar Gas (Bio-gas) and various methods to reduce ones dependence on forest produce. These are expressed as 'ULISU, BELASU and BALASU' (to save, to grow and to utilise). These constructive programme is the main reason for sustenance of the movement. It has become a permanent programme to change ones attitude towards nature, and development. The main objective of Appiko is to strive for alternative development in which there is harmonious relationship between man and nature.

#### 4.5 Outcome of peoples movement.

- 4.51 Obviously, the awareness all around the state and among common people is the result of Appiko Chaluvalli. It has had fair amount of success in reaching the hearts of people. As a result of this village girls wrote poems and folk songs. Dramas and plays were written on this theme. Even the folklore Yakshagana is adapted to convey the theme of Appiko. For the first time rural households saw street plays depicting the idea of Nature. In a nutshell it can be said that Appiko has given an impetus to ecological awareness in Karnataka.
- 4.52 The present trend of peoples movement is to press for their RIGHTS. No movement tries to analyse its internal role, as to what are its duties. Before demanding RIGHTS one should be aware to perform his duty. Appiko has tried to emphasise on peoples duty. People are also responsible for destruction of forests either because of increasing population or wrong practices like burning grass land, lopping trees in rainy seasons etc., Appiko has tried to tackle these issues where people are responsible for destruction of forests. Before asking the government to put a ban on commercial felling people in villages are persuaded not to fell green trees. If we are asking something, we should be practicing it ourselves. Thus we stress on change of HEART, to establish harmonious relationship with Nature.

4.53 But the movement has hardly made any dent on forest policy. Our demand is to stop commercial fellings above 300 meters in western ghats. Green felling has been stopped only in Sirsi Forest Division. Thus we have achieved a limited success. Clearfelling of natural forest and mono-culture plantations are still coming up. Thus, our achievement is very meagre and our demand that forest should be treated as CAPITAL to produce AIR, WATER and SOIL is ignored. The government is bent upon eating into this CAPITAL to earn revenue. It treats Forest as a warehouse to supply raw material to industries and fuelwood to cities.

#### 5.0 ENVIRONMENTAL SCENE :

- 5.1 On government level there is Department of Environment at centre and also in some states. These departments have become the stereo type government bureaucracy and lack the dynamism. Most of its funds is spent on administration and research work. This departments hardly contribute to peoples movement. Instead of taking courage from such grass root movements they ignore such movements. Even their policies on environment is far away from reality. It has become another ivory tower, deciding peoples destiny.
- 5.2 The second set of people working on environmental issues is that of Non Governmental Organisations. (NGO). In recent years NGO's working on environmental issues have mushroomed all over big urban centres. The characteristics of these organisations are; they are city based, started and staffed by urban middle class people. They write very good reports using technical jargons to impress people who are educated. Many of them get funds from foreign agencies. They survice on bringing research reports produced after doing post-mortem of grass root ecological movement. For most of them the people who are fighting for survival become a 'target group'. Frankly speaking, their understanding of rural area is very limited as their base and background is the urban centre. The trend of commercialisation in society has attracted environment scene. The NGO's have capital sed on this issue. In India many of these organisations have taken up the role of becoming spokesman on behalf of grass root ecological movements. Many times they have hampered the growth of peoples

movement trying to bring them under their domain. This is in general my experience of NGO's. But there are some exceptions to this who try to support peoples movement in their effort without hampering their growth.

- 5.3 Contrast to the above view of environment there is the third view, peoples view. People who are struggling for survival, either on the issue of depleting forests, on polluting river or sea. Those who launch the movement or participate in this are the one who have suffered the hardships. Their perception is clear and they fight for their survival. The effort of such people is against the 'so called' development policies. Their approach is total. They see the interlinkages, and fight for a total change in overall development policy, keeping the natural balance intact. Most of the time peoples view is rejected, dubbing it as impractical and against development.
- 5.4 The people belonging to first two categories (5.1 & 5.2) have now evolved a new jargon to present the problem and their ultimate answer is ECO-DEVELOPMENT. Ecology is taken as a separate entity to be developed. This eco-development denies the all pervading broadview of ecology is an ad-noc approach. Which ignores other important linkages. Eco-development does not question the 'so-called development' which goes on at present affecting poorest groups in our country. Unfortunately this piece-meal approach is gaining popularity among decision makers.

## 6.00 PERSONAL ISSUES

- 6.1 My role in Appiko has been that of an organiser, spreading the message and encouraging people to take action. I do not believe in setting up an central organisation with branches of Appiko. My work as I see it is to encourage more activists and groups to emerge, who have total freedom to decide what action they want to take. My idea is to build confidence of these groups so that they are not dependent on external assistance to solve their local problems. This will lead to a decentralised working. I feel in such decentralised groups the chances of sustainability of any movement is greater and it has a wider impact.

- 6.2 As regards success and failures in these two years of working, I have had experience of both. While I feel satisfied about the mass awakening among people in general, I have my own doubts whether this awareness resulted in any action. Only one village has started its nursery to raise saplings and only few villages took to serious afforestation work. There are instances of many individuals changing their attitude towards trees and forest. Many have reduced their dependence on forest and have taken step to help regeneration. The people are inviting activists to construct Astra Chullah. All these positive elements encourage me but it is so difficult to measure such non tangible achievements. These attitude change in two years is difficult to visualise. I think this is also part of constructive programme, once a person changes his attitude, there is bound to be some action.
- 6.3 In the process of performing my role (6.1) it seems I have overdone my work and as a result of this Appiko and myself have become synonymous. Too much dependence of Appiko on single individual is dangerous. So far the second line of leadership has not emerged except in Sirsi area. It may be because of my working style. If this continues then there is every chance of Pandurang becoming a 'GURU' - a Baniyan tree under which not a grass of blade will grow.
- 6.4 Many people have asked me as how my working (in Appiko) does help the poorest groups in society. The people living near forest depend on forest produce for survival. In many villages, the poorest groups are cane or bamboo weavers and those who get employment while gathering medicinal plants or forest produce. Depletion of forest has directly affected their life, hitting at the base of their survival. My work of assisting these people to protect their survival base is an attempt to stop further impoverishment. I have personal experience of these people struggling to get thatch or grass to cover their roof, and the difficulty in getting water for domestic and agricultural uses due to constant depletion of forests. Thus my idea is, these affected groups have the first right over natural resources on which they survive. The question is whether these resources will be utilised to meet the demand of poorest groups or for the elite and middle class in society.

- 6.5 In a society with specific patterns of secured life and the status attached to it, my nomadic life of these two years is beyond ones imagination. Suggestions pour in asking me to take up secured job. It is difficult for people to understand my work and many think I am a FREAK!. Initially the people thought that I am preparing a stage to enter politics. But they have seen my political and neutral stand. I have become a peculiar specimen, not adhering to any set patterns.
- 6.6 While deciding to take up this work I planned to earn money through free lancing. I did succeed in the initial stages, but at present I hardly get anything from journalism. I ventured to take some research projects, but I can not write these due to my wide area of working. I believe that financially I should be able to earn and meet basic needs. However, I have not been able to do this. At present my expenses are met with donations from people, selling booklets on Appiko. It is because of the hospitality of the vil ages I am able to sustain these two years. Frankly speaking, I have not given serious thought to these issues. I know if I want to carry on this work I should try to come out of financial insecurity.
- 7.00 A LOOK AT FUTURE
- 7.1 While starting this work in 1983 I had a vague idea as what I wanted to do. Now Appiko - Chipko movement has given a concrete shape to my ideas. While analysing my role I feel it is very important that I change my way of working so that many people come forward to work for the cause. So far I have been busy with actual movement but in future I should be in a position to show in practice as what is alternative development. It is easier to preach our ideas but I feel one should practice before preaching. To achive this I need to settle down in rural area and try to assist poorest groups to get control over natural resources and to achive harmonious relationship with nature.

Feb. 24, 1985.

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## SIX YEARS AS AN ENVIRONMENT ACTIVIST

- Pandurang Hegde

### 1.0 Introduction

This is an attempt to record an activists' assessment of achievement and failure. I have completed six years organising people for a grass roots movement and for environmental action. These years as a voluntary worker are an important period in my life; now it is essential to review the work to plan future action. It is also essential to assess the relevance of such work in relation to the socio economic conditions prevalent in India. This report therefore attempts to analyse my work from January 1983 to December 1988, as an exercise in critical self evaluation.

### 2.0 Background

2.1 I was born in a small village amidst the tropical forests of Karnataka. Went to school at Nagpur and Bombay following the postings of my brother, employed with Central Government. Having graduated from the Karnataka University I went to the Delhi School of Social Work, University of Delhi and equipped myself with a post graduate degree in social work. In spite of the opportunities offered in urban areas, I decided to work in the rural areas and joined a Voluntary Organisation in Damoh, Madhya Pradesh. After a valuable experience of four years I left Damoh to work in Western Ghats, Karnataka to protect the tropical forests. I was moved by a broader vision of working for rural interests and embarked on this venture with idealism.

2.2 Uttara Kannada district is fertile ground for the growth of an environment movement. The depletion of tropical forests from 81 percent in 1952 to 20 percent in 1982 led to destruction of water resources and reduction of soil fertility. The establishment of development projects like the plywood and paper factory, and the construction of big hydel dams were the prime reason for the destruction of the forests. The people were encouraged to launch a movement to halt the further

destruction of forests; this movement came to be popularly known as "APPIKO ANDOLAN" (CHIPKO IN KANNADA). Just as the above mentioned projects destroyed our forest wealth, so in recent years the setting up of Asia's biggest naval base "SEABIRD" in the coastal areas and the proposed nuclear power plant at Kaiga threaten to destroy our coastal wealth. The naval base will uproot 35000 fisherman, who will become refugees in their own land and victims of the 'defence' of India. Similarly, the nuclear power plant is forced upon the people in the name of removing "backwardness". Thus this small district has to sacrifice everything in the 'National Interest'. The development experts and so called scientists claim that these sacrifices are essential to bring about development. However, the people think differently; they have had enough experience of heavy doses of "development" which have only succeeded in destroying the basic survival resources. The conflict between the development interests of state and the interests perceived by the common people regarding the utilisation of resources has paved the way for a grass-roots people's movement in Uttara Kannada. The Nuclear Power Corporation of India is facing a stiff opposition from the people thwarting the establishment of the nuclear power plant at Kaiga.

- 2.3 The experience of grass roots work determined me in sharing it with workers in other regions of India. The depletion of tropical forests in south India attracted immediate attention. Already the emergence of strong action groups in ~~Uttara~~ Kodagu, Karnataka, and in Wynad, Kerala to save the tropical forests in an indication of spontaneous creativity among people. In central India also, the tribal women of Bastar and the tribals in Gandhamardhan, Orissa have launched similar movements to protect their forests. Similarly in the deserts of western Rajasthan in Bheenasar, Bikaner a strong movement has emerged to bring back greenery to the desert. We in Karnataka share common goals with all these movements. Though in the current environmental scene all these movements are categorised as 'environment movements', in reality they are nothing less than the struggle of the common people for survival. It is an attempt by the people to conserve the genetic resources around their villages. It is only by doing this they can hope to get security of life.

2.4 In 1985 I visited Holland to attend a course on Rural Energy. This visit exposed me to various aspects of alternate energy sources. A stay of four months in different parts of western Europe provided me with an opportunity to live with different cultures. Western Society is also passing through a critical stage with serious problems affecting the individual and society. My stay with the community of Arc in Southern France strengthened my search for strategies of alternative living.

2.5 A short trip to Japan when I attended a meeting of Asian activists in March 1988 gave me an opportunity to learn from the experience of Asian countries. I met Masanobu Fukuoka, at his farm in Shikoku to learn about Natural Farming. I also visited some groups involved in anti nuclear movement. Japan is fully under the grip of consumer society and the vision of an alternate life style has not made any headway.

### 3.0 Appiko Movement

3.1 In 1983 village groups around Sirsi organised themselves and launched a direct action programme to protect tropical forests in Western Ghats. This is popularly known as Appiko Andolan (embrace the trees movement in the local language). The success of this movement attracted state wide attention. In Kodagu district a very strong movement under local leadership emerged to halt the deforestation in the catchment areas of the Kaveri. They achieved some success as state government changed forest policy. The government plan to set up tea plantations in the shola grass lands of Kodagu was also opposed by the people as it would destroy the delicate shola ecosystem.

3.2 In January 1987 I launched a foot march along the river catchment areas in the Western Ghats. A group of Appiko activists joined me at Talakaveri, the origin of Kaveri river in Kodagu district. I crisscrossed the Western Ghats through Karnataka covering all the major watershed of rivers originating in tropical forests. We completed the foot march at Digu, the origin of river Kali on the border of Karnataka and Goa. It took us three months to cover a distance of 1400 kilometers. We had no sponsors to finance this long walk, but the people supported us; they provided food, shelter and funds. This helped me to

establish personal links with forest dwellers and other people. This gave us an opportunity to gain in-depth knowledge of the existing genetic diversity in the tropical region of western ghats. These are severely degraded due to industrial exploitation, the establishment of hydel power projects and encroachment. These development projects have destroyed the diversity of forest ecosystems. The forest dwellers are the one who have suffered the adverse impact of erosion of genetic resources.

3.3 The impact of the Appiko Movement is two fold. At the people's level it has helped to create an awareness of the need to protect the environment. This has resulted in the emergence of spontaneous actions in various regions. In many villages, efforts are being made to regenerate forests on barren land. The cost is not much in comparison with that spent on government afforestation programmes. Our achievement is due to the people's involvement in our afforestation programme. At government level, the afforestation programme spending huge financial resources is anti people as people are not consulted, neither the species planted is useful to people. The government raises mono culture plantations of acacia ariculiformis. In contrast people have regenerated indigenous species, which are used by them. People are playing dominant role in regenerating plant genetic resources of the region. The government has also been prevailed upon to change its forest policy, to plant local species. The logging in natural forests has decreased and some forest based industrial units are importing timber.

3.4 People are surprised to know that the Appiko Movement does not have a central office or secretariat. We work directly with grass roots groups in rural areas. These groups take all decisions regarding the launching of the movement. The concept of local leadership is inbuilt in this process. These independent, decentralised groups preserve their unique character and are the strong pillars of the Appiko Movement. This process has paved the way for a second level leadership in the movement. Thus the central leadership and control is done away with from the initial stage. However, a link is forged between such local groups for the purpose of sharing experience and arriving at common goals.

3.5 Voluntary Organisations and critiques of the movement question as to how long we can sustain actions, with the help of volunteers alone. The question is relevant; can such movements sustain themselves without financial aid from outside? We have an answer to that. As long as we are relevant to local issues we will survive supported by the local people. Once we become irrelevant we do not have the right to exist. However, there is some valid criticism made of our success. Due to the pressures exerted by the movement the state government has reduced exploitation of forests in Karnataka. But this has led to a step increase in the import of timber from countries like Malaysia, Indonesia and African nations. These imports have been made possible by destroying the survival base of the Sarawak tribals in Malaysia and the local inhabitants in Indonesia. The international links of poverty and development have been brought out and must be considered.

#### 4.0 Environmental Scene

4.1 The present government at the centre started its tenure with high promises of cleaning the Ganga and an afforestation target of five million hectares per year. Hope was high that the government would understand the need to protect natural resources. But these hopes were shattered within a short time. The clearance given to the Tehri Dam in Himalayas and the Narmada Project in central India heralded the worst period of government sponsored environment destruction in the post independence era. The craze of aping the western development model and the heavy reliance on the technological approach to solving India's problems will surely accelerate the destruction of natural resources, and destroy the survival base of poorest groups. Such policies make it inevitable that this government will crush genuine people's movements. It is in order to cover all these lapses that the government has launched an extravagant propaganda project on environment. It has reduced environment protection to celebration of an "environment month" campaign around Indira Gandhi's birthday. The motto of government at centre and state is; speak of environment protection for a month and for rest of the year systematically destroy it!

- 4.2 The mushrooming of Non-Government Organisations (NGO's) indicates the burning nature of the issue. These so called NGO's have emerged as powerful spokesmen on ecological issues. The government believes that these NGO's can deliver the goods, so they have actually become middlemen between the people and the government. Huge funds are allocated to the NGO's to implement government programmes. This gave leverage and power to the NGO's, but in the process the government successfully coopted and diluted the spirit of voluntary action.
- 4.3 A critical look at these NGO's reveal a definite pattern of adaptability to market forces. In the sixties these catered to the needs of rural development, in the seventies they shifted their concern to appropriate technology, and in the eighties to the field of environment. As showed entrepreneurs in the development field many NGO's have successfully adopted this change. This has given rise to a new terminology in the voluntary sector. Among the NGO' entrepreneurship we have agencies as big as 'Super Market', catering to the needs of governments and international funding, institutions, then we have 'whole sale' dealers and 'retail shops'. Mushrooming NGO's represent these category of 'shops' that cater to a specific target group by acting as middleman between funding agencies and government. The trend towards consumerism and commercialisation in contemporary Indian society is very well reflected among NGO's.
- 4.4 In contrast to all these organised groups, a strong wave of people's movement is emerging in India. They are supported locally, work with local leadership and are spontaneous in their actions. The tribal women's movement in Baster, movement to save Gandhamardhan in Orissa, the struggle against exploitation of natural resources in Wynad, Kerala represent some important movements in India. These people are fighting against the government sponsored development programme that destroy the natural resources <sup>and genetic diversity of their region</sup>. They represent a people's claim over management, utilisation and ownership of natural resources.

5.0 personal issues

- 5.1 My role during these years has been that of an Organiser, sharing experiences with different groups and assisting them in launching grass root actions. Increasingly, I have kept a low profile allowing local leadership to emerge. This method of working has proved to be effective. The Appiko movement is not dependent on any single leader or individual. When I have not been in this area, people have launched action to tackle complex situations. This maturity among the cadre has released me to travel widely and establish links with other similar movements in India.
- 5.2 I continue to lead a nomadic life, without a job and without the security attached to it. Free lance journalism brings some financial returns. But without some kind of financial assurance, it may be difficult to continue with this role. I survive because my supporters, sympathisers, provide food and shelter. Financial independence and self reliance is essential in life. But I have not been able to tackle this issue.
- 5.3 I have attempted to tackle this dilemma by going back to the land. I have purchased six acres of rainfed paddy growing land in a rural area on the banks of a stream, 16 kms from Sirsi. My plan is to make this a centre for future activities. It can provide a place to experiment with living in a community, practicing natural farming. But lack of financial resources has hampered the implementation of my plan. Only generous help from sympathisers can help to establish this centre and to make it eventually self reliant.

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## BIO DIVERSITY CONSERVATION PROJECT

(AT SIRSI, UTTARA KANNADA DISTRICT, KARNATAKA, INDIA)

### 1.00 INTRODUCTION

1.01 The tropical region of Western Ghats in South India represents one of the diverse ecosystems in the country. The coastal region, the hills and adjoining plains ;provided a unique opportunity with varied agro climatic zones has helped to evolve the rich genetic resources in this area. It is this richness in forestry, especially spices and tropical timber that attracted Europeans in eighteenth century. The onslaught of development schemes during colonial rule and later during post independence period has reduced this genetic diversity. But even now the people have successfully maintained the diversity due to constant utilisation of genetic material in daily life. The foreign funding agencies ( Overseas Development Agency, U.K. ) have come forward to assist in preserving and enhancing the diversity of the tropical forests of this region. However, there is an urgent need to assist people in maintaining their diversity through peoples Bio-diversity programme (PBOP). Perhaps this may be one of the strategy to counter the moves of advancing bio-technology dominated by powerful multinational companies.

### 2.00 The Main Objectives :

- A) The main objective of the project is to provide a supportive role to people in maintaining, enhancing and utilisation of genetic diversity in the region.
- B) To provide assistance to establish community level genetic conservation programmes.
- C) To link such programmes to formal and informal sectors.
- D) To document the traditional knowledge in utilisation of genetic resources and to support ecological agricultural practice.
- E) To create awareness among common people, especially farmers about erosion of genetic diversity and the threat of bio-technology.
- F) To assist in evolving a peoples movement to control genetic resources.

### 3.00 STRATEGY

The strategy is to work with those communities who are cultivating, preserving and utilising the genetic resources of the region. In the tropical region of western ghats there are some farming communities who still cultivate traditional paddy varieties without chemical inputs. In recent years the younger generation of farmers are disillusioned with the high input green revolution technologies and high yielding varieties of seeds. This group has practiced chemical farming and experienced the consequences of its affects on farm and health. They are eagerly looking for an alternative. An attempt will be made to tap such young farmers to build the bio-diversity project based on their experience. The third group of people to be involved is women farmers and women agricultural labourers. Another group of people involved in this project is elderly people from the community and tribal groups. They possess an enormous knowledge on genetic resources of local area and the project will learn from such traditional knowledge. In fact, the strategy of the biodiversity project is build upon peoples knowledge and enhance the capacity of grassroot community level action groups.

#### 3.01 Identification

This involves a series systematic socio-ecological surveys of the land used by communities (farm, forest, common property and ponds) in consultation with farmers, traditional medicine makers and artisans to identify the genetic material used by people. It may involve establishing contact with group of farming community in interior forest area who are utilising traditional paddy varieties and who depend on forest resources for every day living. An attempt will also be made to form a informal group in each region who are utilising such genetic resources, and also farmers who are interested in this issue. In case of women, separate womens groups may be formed in some areas depending on their response. A constant effort will be made to build such womens groups in utilisation of genetic resources.

#### 3.02 Collection

In the area of food, fruit crops the communities identified above will carry on a series of collection expeditions covering range of crops during growing seasons. In the initial phase special emphasis will

be made to collect indigenous varieties of food crops like rice and millets. The rare species or the varieties that are going to get extinct will receive additional attention during the programme. In addition to food crops emphasis will also be laid on forest species and medicinal herbs. In some communities people, especially women use wild vegetables from forest or field. This practice is gradually disappearing. To revive this practice special attention will be made to collect wild vegetables. This will enhance the nutritional value of food intake without increasing extra cost.

### 3.03 Community Gene Banks (CGB)

The community group in each region or in selected villages will take the responsibility of establishing Community Gene Bank. As rice is the staple diet in the region, the initial emphasis will be to retrieve those traditional rice varieties which is facing the threat of extinction. These varieties will be regrown in farmers plots. The loss of income to farmer growing this rare variety will be compensated by the project. The seeds will be stored in accordance with the traditional seed storage practices. The herbs and wild vegetables will be regrown in farmers plots. In certain cases it may become inevitable to conserve a patch of forest or land in which such wild species are found. The CGB will gradually collect various varieties of seeds, plant material and root stocks so that it represent the diversity of their genetic resources.

### 3.04 Utilization

The Community Gene Banks is not place where the genetic materials is stored, but it is a resource from which farmers can use the varieties that suits the need of particular agricultural land. For example there are different varieties of rice for wetland and rainfed dryland paddy growing areas. The traditional varieties suitable for this particular zone will be made available to farmers for use. Similarly in other crops and vegetables an emphasis will be made to utilize the gene Bank stock. Farmer to farmer exchange of seeds will be encouraged through these banks. The main emphasis of the bio-diversity programme is on constant utilisation of the genetic resources by the community.

#### 4.00 Documentation

##### 4.01 Local/Traditional knowledge

Documentation of traditional agricultural practices is very important because this is disappearing at a faster rate. These practices have evolved over centuries, learning from generation to generation. Though it may have some lacune, it is essential to look into traditional practices. In addition to agriculture, documentation of traditional herbal medicine will be taken up. Another area of traditional knowledge is in the field of veterinary care wherein a lot of knowledge on treatment of veterinary disease is based on plant genetic material. An effort will be made to document these practices.

##### 4.02 Seed Storage and Collection

The area of seed storage and collection there are established traditional practices. These practices will be documented by contacting people who still practice these methods. Especially in crops like coconut, arecanut, jack fruit or mango there is already popular eczone which are known for traditional varieties. These sources will be identified and to strengthen the traditional practice. The community gene banks will be encouraged to follow these practices.

#### 5.00 Awareness/Education

The integral part of the biodiversity project is to educate people, farmers and consumers about the importance of conserving biodiversity of the region. There exists a wide gap between the common people and policy makers. The policy makers allow the multinational seed companies to play the game and destroy the self reliance of farming community. An effort will be made to educate the farmers about the role of multinational companies in propagating chemical agriculture. The recent revolution in biotechnology, and its effects on farmers is also another area wherein there is urgent need to create awareness.

5.01 This awareness, educational programme will publish small Booklets, posters and pamphlets in local language to reach people. In order to reach to illetarate groups the posters, local flock dance drama will be used as a medium.

5.02 To reach large number of people in the rural areas regular programmes with slide shows will be arranged. During Melas (Traditional Fair) exhibition, talks, posters will be arranged. Thus modern and traditional medium will be used to communicate the message of biodiversity conservation.

5.03 Camps/Workshops

Regular workshops of farmers will be held to exchange the ideas and to create awareness. These workshops will be held in villages. The main emphasis will be on conservation of bio-diversity and the role of people. These workshops may expose people to the threat of bio-diversity and initiate a process to launch community biodiversity project.

5.04 Regional Meetings

These meetings are to be held for a particular ecozone to tackle the issues relating to bio-diversity.

6.00 Long term plan

The long term objective of the community bio-diversity conservation project is to evolve a people based sustainable development strategy in the tropical region of Western Ghats. It will strengthen peoples efforts, and build their confidence in dealing with the issues thrown up by contemporary research in agriculture and biotechnology on this basis we may be able to bring pressure on government to change the policies, to support peoples initiatives.

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THREAT TO BIODIVERSITY IN TROPICAL  
ECOSYSTEMS

The tropical ecosystems in Uttara Kannada District, Karnataka, represents, the diversity of all life forms. The people of this district depend on the resources for their survival. In the hilly region people living adjacent to forest areas depend heavily on plant resources. Similarly people living on coastal region depend on the aquatic diversity of the sea. The cattle and animal husbandry is dependent upon the resources available near their habitation. The folk healers and traditional medicinal practitioners utilise plant genetic material from their surroundings. The diversity of the tropical ecosystem in this region provides an opportunity for the inhabitants to lead a life of prosperity.

The work we are engaged in is on three areas. To assess the threat to diversity in the forests, the spice garden and paddy cultivation. These three areas are linked to each other and the sustainability is also dependent on these interlinkages. The threat of destruction in one forest area has an immediate impact on spice garden cultivation and also on cultivation of paddy.

FOREST :

The community ownership of the forests was taken away by Britishers in 1802. The people used the forests as a community asset belonging to the village temple. As the colonial rulers realised the importance of timber from these forests, they classified the forests as Reserve Forests, and protected forests. They took away the best forests of the community for harvesting timber. The forest policy in the post independence era followed the policies of colonial rulers. They clearfelled natural tropical forests to plant monoculture plantations. The rich diversity of natural ecosystems was destroyed to create a man made forest representing monoculture plantations of teak and eucalyptus. Large hydro electric dams, establishment of forest based industries led to an increasing pressure on the forest resources. This pressure led to depletion of the forest resources in this region.

Ignoring the root causes for depletion of the forest resources, the foreign funding organisation, ODA, U.K. (Overseas Development Organisation) has come forward to provide financial assistance, a grant of Rs. 260 crore rupees to preserve the tropical forests of the Western Ghats. The ODA scheme envisages setting up of village forest communities to manage the forest resources. But at the same time this project excludes the people's right over other forest areas by classifying the forests into different zones. This zonation will contribute towards further alienation of people from the forest resources.

In spite of these threats to diversity in the forests, the local people have launched a campaign to regenerate the forests on barren land. Their initiative is spontaneous and they regenerate the forests with a wider diversity of species, which they use in their livelihood.

#### SPICE GARDEN:

The spice gardens of Uttara Kannada represent a sustainable way of utilising the genetic resources for livelihood to earn cash income and also to produce food for consumption. These spice gardens are always established in the valleys, adhering to the ecological principles of not destroying the steep slopes of hills. In these spice gardens multi-layered trees of areca, banana, pepper and banana were grown. This provides cash income to cultivators. The banana is for local consumption as well as sale. All these were of indigenous variety, evolved over hundred of years in adaptation to local ecozones.

However, in 1970's another banana species was introduced into the region. This introduction brought 'bunchy top' disease into the region and this disease gradually spread to various other areas. At present there is severe infestation of this disease to banana crop. Another crop affected by introduction of species from outside the region is pepper. Pepper vines were imported into the region from Kerala. With this came the viral disease that has destroyed the traditional pepper crop. Cardamom <sup>has</sup> also met the same fate.

Now with biotechnology the multinational companies are manufacturing disease resistant banana and cardamom to the farmers. These disease free strains are developed in the sophisticated laboratories of these companies.

But they have no resistance once planted in the gardens. They are elite strains on which farmers have to spend money.

PADDY LAND :

Rice is the staple crop of the region. Traditional varieties have evolved for specific areas like upland and low land regions. The introduction of green revolution technology has led to destruction of traditional varieties. In addition to this the use of pesticides and fertilizers has caused damage to health of soil and human beings.

In recent years farmers are gradually shifting from green revolution technology to traditional farming practices based on organic inputs. The farmers have retrieved traditional paddy varieties that need less inputs in comparison with HYV seeds. The diversity in the paddy varieties is being re-established in participation with farmers.

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Hulemalgi Building,  
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Bees play a very important role in pollination of agriculture and forest crops. In addition to this it provides employment to thousands of families through honey production. There are special tribes known as "Jenu Kurubas" in western Ghat hills. Their traditional occupation is collecting honey and wax from the tropical dry deciduous forest areas.

THREAT - The local bees (APIS CERANA) is threatened due to introduction of exotic European bees (APIS MELLIFERA). For the first time in South India the European bees were introduced by the Entomology department, University of Agricultural Sciences, at its Gandhi Krishi Vigyan Kendra in Bangalore. The scientists brought 15 colonies of European bees from Hissar, Haryana in December 1990. By the end of May 1991 only 2 colonies have survived and the rest got destroyed due to mite attack and European Foul Brood disease. The scientists are planning to import more colonies of European bees for this experiment.

THE ISSUE : Though the introduction of European bees is for experimental purpose, the experiment cannot be conducted under controlled conditions. The European bees interact with local bees. This interaction increases the possibility of passing on the disease from exotic bees to local bees. The local bees does not possess the resistance to these diseases and there is every possibility of local bee colonies getting destroyed and eventually become extinct.

The European bees are introduced with the objective of increasing the yield of honey. But these exotic bees are genetically not suited to tropical hot climate of south India and it might pose a severe death blow to local bees and indigenous bee keeping industry. This opinion is confirmed by many well known international bee experts like Jan Olsson from Denmark, Prof. Woyke from Poland, Prof. Ruttner from Austria and Shri. K. M. Joyappa from Kodagu, India.

AFFECT : The experiment with bees is always very risky. In 1956 African bees were brought to Brazil for breeding experiment. This has led to creation of Africanised bees that has threatened bee keeping

upto U.S.A. Even in Kaghmir and Himachal Pradesh introduction of European bees has led to destruction of local bees. Based on these experiences it is possible that the same will be repeated in South India leading to extinction of various indigenous bee species. The affect will be :-

ON TRIBALS : About 10 000 Tribal families will loose employment and income.

ON ECOSYSTEMS : The pollination of Agriculture and forest crops will affect the total ecosystem in the region leading to extinction of many valuable species.

ON GENETIC DIVERSITY. It will destroy the genetic diversity of the area, leading to introduction of single bee species- a genetic uniformity - leading to vulnerability.

THE NEED : The need at present is to stop the experiment at University of Agricultural Sciences, GKVK, Bangalore And in future to stop introduction of exotic bees in South India.

To pressurise the government for a bee research policy that aims at breeding from local bees that can raise the yield. There are bee colonies in Kodagu that can raise honey yield equal to or more than European bees.

Please support this campaign to save indigenous bees. These bees give us sweet honey, help to pollinate our crops, but at present they are under grave threat of getting extinct by an hasty act of few scientists.

Bees can not protect themselves from this threat. So we request you to come out in support of bees.

Join the campaign to save the Bees.

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SAVE HONEY BEES CAMPAIGN:

REPORT- II

The campaign to save the indigenous honey bee species in South India is catching momentum. A letter was sent to Department of Ecology and Environment Government of Karnataka to take up the issue. The officer incharge said that he is very much concerned about the whole experiment and has asked the Vice Chancellor, University of Agricultural Sciences, Bangalore to send his comments.

= I met Basavalingappa, the minister for Ecology and Environment (On Sept 3) and briefed him about the issue. He asked whether there is any concrete evidence to prove that the disease from exotic bees has spread to the local bees. As usual he assured to do something in this matter.

Seeking Support : At an workshop on organic agriculture organised in Bangalore I raised the issue of exotic bees. In this meeting there were some scientists from University of Agricultural Sciences who promised to arrange for a dialogue between the scientists and people from save bees campaign. But it did not materialise.

Present status of the research at GKVK: Out of eleven bee colonies of A.M. only three survive (on Sept 6 1991). Out of this only one is developing well but other two colonies are weak. The research personnel do not know whether the dwindling of the colonies is due to the disease or due to absconding. Robbing of A.M. by A.C. must have led to carrying the disease to indigenous species.

THERE ARE REPORTS OF DWINDLING OF APIS CERANA COLONIES IN THE UAS, CAMPUS AND IN THE APIS CERANA APIARY IN THE CAMPUS; But one does not know whether it is possible to link this with the introducing of exotic species in the campus. The plan is to bring in more colonies of the exotic species in future.

Opinion of Devaih, Agriculture Development Officer, Bangalore:

= He was concerned about the introduction of exotic bees but he was of the opinion that the research should continue to explore the possibility of finding out whether the exotic bees can co exist with indigenous bees. He pointed out that in Northern India they co exist together and that it has been found that A.M.

colonies yield more honey than local bee colonies. He also said that A. M. bees being bigger and it has the higher capacity to collect honey in comparison with local bees. (These statements are supported by Mishra's paper).

- = Another point was that the Thai Sackbrood disease has destroyed the bee colonies in northern India and the A.M. is the only species resistant to this disease. This is the main reason for propagation of exotic bees in northern India.
- = He invited the experienced beekeepers in his department to comment on the statement of Dr. Veeresh about the observation that *Apis Cerana*, *Mellifera* and *Dorsata* species were seen foraging on one single sunflower. All the bee keepers said that they have never seen other species of bees foraging on a single flower. Thus it is difficult to believe the statement.

Scientific support : At present we have received letters from bee experts from Denmark, Poland, Nepal, and Austria supporting our case and expressing their opinion against the introduction of exotic bee species. On the basis of this scientific evidence there is a need to raise the issue at national level and to bring pressure on the government to save the indigenous bee species.

- Pandurang Hegde

September 7, 1991

Bangalore.

SAVE HONEY BEES CAMPAIGN

REPORT- III

The campaign to save the indigenous honey bees in south India has taken a very interesting turn. There were press reports on the introduction of exotic bees and its impact. 'ADIKE PATRIKE' a farmers Kannada monthly magazine carried article in detail about the controversy. It basically questioned the scientists about the danger involved in the experiment with the introduction and its impact on the ecology of the region. It also carried an follow up article with an introduction and a detail interview with Jan Olsson, the Bee Master and an expert on both European bees and Indian bees. The Editor of this Magazine requested the Vice Chancellor of the University of Agricultural University Bangalore, to invite Jan Olsson to the University and allow him to inspect the bee colonies of exotic species.

On January 27, 1992, Jan Olsson visited the University with an invitation from the Vice Chancellor. Before going there we met Shri. Sampangi, the Special Secretary to Department of Environment, Govt. of Karnataka and told him the need to have an impartial view of this experiment.

At the University Jan Olsson visited the site where the exotic bees were kept. He inspected all the nine colonies and took samples of bees and the brood from each colony. The bees were extremely docile and the way Olsson handled the bees with perfection left the scientists dumbstruck. Olsson even showed the honey bee queen and the call it gives. It was really a fantastic experience to have observed the Bee Master performing the job of inspection with extraordinary skill and perfection. At the outset Olsson did not find any disease or the mites in these colonies. However, the application of sulphur may have driven off the mites. For this reason and also to get a natural scientific report the samples of the bees and the brood was sent to Denmark, Danish Bee Research Laboratory. They will analyse the samples and send the report within a month.

On January 28, 1992 Jan Olsson was invited to speak to the students and scientists at the Department of Entomology at the same University. While introducing Olsson, Dr. Veeresh said that the Vice Chancellor

had requested him to stop the project after the controversy but he wanted to give a chance for the bees, with a fair trial to establish exotic bees. He said that if there is any disease all the colonies will be destroyed.

Jan Olsson gave a detail talk on the introduction of exotic bees and the problems associated with it. He emphasised the point that the introduction of Mellifera in India, especially south India, it will not survive due to the presence of mites. He pointed out that it is also not useful to keep them for commercial bee keeping. At the end he emphasised the need to study the indigenous bees and the need for establishing the independent Bee Research Unit in the University for breeding the indigenous bees. There was an interesting question and answer session that followed his talk.

On the whole the scientists are convinced that there is an urgent need to concentrate on the research studying indigenous bees than exotic bees. All the credit for the shift in this stand of scientists goes to Jan Olsson. He really convinced them about the importance of local bees and the danger in introduction of exotic bees.

We are eagerly looking forward to the report of the Danish Bee Research Laboratory which should arrive in a months time. Till then let us keep our finger crossed.

PANDURANG HEGDE

January 28,, 1992.

SAVE HONEY BEE CAMPAIGN

REPORT- IV

Thai Sack Brood disease and its effects on bee keeping in South India;

The arrival of Thai Sack Brood (TSB) disease was identified in March 1992. The death of hundreds of bee colonies in South Kanara district attracted the attention of Bee keepers. J. Olsson an expert from Denmark was in Coorg during that time and he toured the region affected by the disease. He took the sample of brood and sent them to the laboratories in Europe. The results showed that the brood was affected by TSB.

This disease has spread to various parts in South India. It has already destroyed bee keeping in Kerala. We are unaware as to the whether it has affected the wild (Dorsata) colonies and other species. The death of bee colonies will lead to reduction in yield of horticultural crops due to lack of pollination. In addition to this, non availability of honey will reduce the cash income of bee keepers and of those tribals who collect honey from the forest.

Controlling TSB : There is no medicine to control TSB. The only alternative is to take up breeding programme to rear Queens that are resistant to TSB. The Government has to take immediate action and the work should be started on a war footing to rear the TSB resistant bee colonies. However, the State Government in Karnataka is still inactive and it has taken up decision which can cause further destruction of indigenous honey bees in western ghats.

Introduction of A. Mellifera in Coorg :

After the debate over introduction of A. Mellifera and the experiment in U.A.S. Bangalore it was decided that A. Mellifera colonies will not be introduced in western Ghats. However, this decision was changed and the Mellifera colonies have been introduced in western ghats. After a meeting of scientists and the bee keepers the state government has given permission to transfer eleven Apis Mellifera (exotic honey bee) colonies from University of Agricultural Sciences,

Bangalore to Maakkuta in Coorg. The Government & Scientists are keen to test exotic bees for their resistance to TSB. But it may boomerang and many lead to more complicated problems, like virus being passed on to local honey bees.

We have to think on following points before banking on exotic bees:

- 1) The experiment on U.A.S. Bangalore has revealed that *A. Mellifera* is not able to adjust to tropical climate (e.g. in Coorg the bees were so excited that they went out on full moon night).
- 2) On economic grounds *A. Mellifera* requires more inputs like sugar and regular medication to keep it alive and it is not cost effective in terms of honey production.

Under such circumstances was it a right decision to have introduced *A. Mellifera* in midst of forest in Coorg?

Feb 10, 1993.

- Pandurang Hegde

SAVE HONEY BEE CAMPAIGN

REPORT - V

The threat of extinction of indigenous honey bees is taking place at a faster rate. The deadly Thai Sack Brood (TSB) has already destroyed ninety five percent of bee keeping in the states of Kerala and Tamil Nadu. In Karnataka it has affected many districts in western ghats. In Kodagu and South Kanara districts it has created disaster for the small farmers and forest dwelling tribals, as a major source of cash income from the sale of honey is not available to them. In Puttur, South Kanara, the Bee Keepers Society has passed a resolution to introduce exotic *Apis Mellefera* bees in western ghats.

INTRODUCTION OF EXOTIC BEES IN WESTERN GHATS:

In March 1992 the scientists at University of Agricultural Sciences, Bangalore agreed that it is premature to introduce exotic mellifera bees in western ghats. While discussing with J. Olsson, the scientists became aware of the problems with exotic bees in the tropical region. It was agreed that the University will take up breeding programme of local indigenous bees in order to increase the honey yield.

However, with the onslaught of TSB disease and death of hundreds of colonies in Karnataka, the attention is again to introduce mellefera bees in western ghats. Unfortunately the government department involved in bee keeping has taken the responsibility of introducing exotic bees in western ghats. They have introduced five mellifera colonies in Maakkuta, Kodagu.

We, (J. Olsson) visited this place in the second week of March 1993. The colonies are kept in Mini Rubber Estate (Kerala). Olsson inspected all the four colonies. In the height of honey season the exotic bees were not collecting honey. The area is full of flowering plants and even in this state of abundance the bee colonies were getting weak. They were not producing enough worker bees. In future it will be difficult for these colonies to survive.

THE ONLY ALTERNATIVE :

One of the main reason for introducing exotic bees is that they are resistant to TSB disease. These exotic bees may survive but they will not be able to yield honey. Similarly they will not pollinate the

crops and forest trees. Under such circumstances they will, economically not viable in western ghats. The only alternative is to find out the bee colonies (indigenous) that are resistant to TSB and breed new colonies from these local bees. Breeding of indigenous bees is very crucial for the survival of bee keeping in south India. But the scientists and the government is bent upon propagating the exotic bees.

It seems that the government and the scientists are not willing to learn from the available evidence but they are interested in only exotic bees. A vested interest seems to have developed among these people who are willing to sacrifice the interest of bee keepers as well as the diversity of this region.

LOSS:

The death of bees in western ghats is going to cause enormous damage to the plantation economy of the southern states. Hundreds of crores of rupees will be lost due to lack of pollination. The real threat is the total destruction of diversity in the region.

Before it is too late we have to launch a strong campaign to press the government to start breeding programme of local bees and to stop the introduction of exotic bees.

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March 14, 1993.

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## INDIA / EROSION OF GENETIC DIVERSITY

India is a vast country with different climatic and soil zones. It has tropical zones as well as temperate zones. It also has dry arid areas and deserts. These different zones have developed their own indigenous agro-ecological systems. These systems developed over thousands of years have evolved different crops suitable to soil and climatic conditions. There existed an enormous genetic diversity in Indian agriculture. The genetic diversity is an outcome of traditional skills in plant breeding, developed for specific agricultural zones.

Rice, wheat and millets are the main source of staple food for the people. It is estimated by eminent Indian agricultural scientist Dr. Richaria that there were 70,000 varieties of rice in India during 1950's. Each area in India produced a different variety of rice, that was best suitable to the soil and climate. Similarly in case of wheat and millets there existed different varieties at different places.

India is a leading producer of spices of different varieties. Most of these spices are grown in tropical region. It has been cultivated in the agricultural land after selecting species from tropical forests. The introduction of tea and coffee in the tropical region is an outcome of colonial rule.

The Green Revolution technologies advocated during late sixties and being followed to this day has led to a decline in traditional agricultural practices. The farmers switched from indigenous seeds to hybrid seeds, mainly of High yielding varieties (HYVs). They also replaced the use of organic manure with fertilizers purchased from the market. In addition to these, they also had to use pesticides to control the pests and insects. At present this modern highly intensive agriculture has occupied about fifty percent of total agricultural land in India.

Though government backed green revolution technology is pushed hard on farmers, there are certain specific areas in India where people still have confidence and belief in indigenous species of crops seeds and in organic agriculture. For example in high

mountains of Chamba district in Himachal Pradesh (in Himalayan Mountains) people still use the traditional com varieties instead of government propagated hybrids. The hybrid varieties does not suit to the special mountain climate in Himalayas. The only success is in case of wheat, wherein the hybrid varieties have increased the yields. However, the government has to change the seeds every alternate year to keep the high yields. However in high himalayan region people grow only traditional wheat crop as they are more suited to the cold climate.

There is a gradual realisation that the HYV seeds are infact high input varieties and they are entirely dependent on outside inputs like fertilizers and pesticides. Some farmers have already decided to stop this method of cultivation and they are searching for alternatives. A rice farmer in the foot hills of Himalayas near Dehradun says "I grow traditional rice on my farm and I use only this for house consumption. I also grow HYV for sale".

Inspite of this growing interest in traditional seeds and practices, the all pervading green revolution has led to a serious erosion of genetic resources in India. For example, in a tribal forest belt in Attappady, Kerala in south India the tribals cultivated 44 varieties of millet. Now only 4 varieties exist and other 40 varieties have become extinct. Similarly in Wynad (literal meaning Land of Paddy) a special variety of swamp rice has become extinct. In Sirsi, Karnataka during 1960's farmers cultivated 34 varieties of rice in an area of 10,000 hectares. At present the hybrid varieties cover 8000 hectares with only 4-6 varieties of rice. Almost 24 varieties of traditional rice varieties have disappeared. Obviously, the introduction of green revolution has destroyed the genetic diversity in rural India.

#### A care for traditional varieties:

In order to combat the onslaught of genetic erosion a small scale action plan was drawn up this year to identify existing traditional varieties of rice in Sirsi area, Karnataka, South India. We got enthusiastic response from small farmers as they responded more quickly than big farmers. So far we have been able to trace 15 varieties of traditional rice varieties grown specifically with a

purpose. We hope to regenerate the interest of farmers in this area towards adoption of traditional varieties by establishing a peoples seed Bank.

The advantages of traditional varieties according to the experiences of local farmers are as follows :-

- = Site specific, the varieties are specifically suited to swampy area or for rainfed dry zone. They are of early ripening variety that take 100-120 days and late ripening variety with 130-150 days.
- = Inputs : There is no need to provide high inputs of fertilizers or pesticides. The organic manure is enough to get good yield.
- = Pest Resistant: The genetic quality of traditional seeds are such that they are immune to pest attack. Even if there is an attack the crop recovers back.
- = Hay: It grows high and provides good fodder for livestock. This is very crucial to farmer as agriculture is integrated with livestock.
- = Security: Even if there is failure of rainfall or occurrence of drought they will yield to some extent and there will not be a total crop failure.
- = Taste: The rice from traditional seeds has a fragrance and taste that is very good compared to the bland taste of hybrids.
- = Weed resistant: The traditional crop has the capacity to overcome the weeds and grow above them. They can yield even when weeds occupy the field.

This project of peoples seed Bank is a new initiative and the response is encouraging. It is very tough task to fight the overwhelming government propaganda and extension network. Nevertheless, the responsibility of preserving and propagating genetic diversity for sustainable agricultural development is an urgent task. Only an active and alert peoples initiative would be able to rescue the erosion of genetic diversity in India.

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(UN PUBLISHED)

## FROM GREEN REVOLUTION TO GENE REVOLUTION

### - Impact of Biotechnology on India Agriculture

- By Pandurang Hegde

On 13th April 1989, the Baisakhi day, well known as harvest festival of India major daily news papers carried half page attractive advertisement of launching Pepsico Food Limited in Punjab.

It showed a group of children holding vegetables, wheat and sugarcane. The caption was "Today the Punjab has hundred years of spring". It also said "Pepsico venture will generate ideas to grow better fruits and vegetables and create an eager market place for our the high quality produce. On this day, together we will sow the seeds of prosperity". We do not know whether people are going to prosper but it is very definite that the world famous Transnational Pepsico will harvest a bumper profit from this venture.

Punjab played pioneering role in adopting Green Revolution techniques in late sixties. Its success has made Punjab the model of agriculture for India. The launching of Pepsico in Punjab marks the starting of a new revolution in agriculture, laying foundations of biotechnology that will change the agricultural scene of the country. This new revolution will come from 'Gene Revolution' that includes any technique that uses living organisms to make or modify products, improve plants or animals. To speak in lay mans language it is a method of creating new crops through transfer of genes.

The agricultural scientists say that this offers the possibility of better protection from pests and diseases, higher productivity and uniform traits, characteristics. They claim that this is the only solution to increase the output of food grains to feed the increasing population. In all eagerness our politicians and scientists have opened our country to this new technology and Pepsico

is the first to enter, there are many Transnationals waiting in the wings. Will this Transnationals and their technology help us to solve our food crisis?

In order to understand this new technology it becomes essential to analyse the present agricultural policy of our country. Obviously the policy is to push farmers to adopt green revolution techniques. The one sided push of this practice of modern technology since late sixties has changed the pattern of cultivation in India. The use of High Input Varieties (that is wrongly known as High Yielding Varieties) has pervaded all major cropping area in our country.

Out of the total cropped area in wheat 76 percent is under HYV, 50 percent in Rice is under HYV and in maize it is 36 percent. Thus all the major staple crops has come under the purview of green revolution. The fertilizer consumption has increased from 5 kg. per hectare in 1965-66 to 43 kgs in 1986. We are paying about 3000 crores as subsidy to fertilisers. And then we consume 57,957 tons of pesticides per year. In fact the green revolution has forced our farmers to addict their land with fertilizers and pesticides. Experts say it is essential not only to pour these inputs but to increase it further to increase the food production. No body questions why inspite of packed godowns our people are starving.

The green revolution has given us Bhopal and increased starvation. By linking our agriculture to fertilisers and pesticides it has filled the treasury of Transnational seed companies. Instead of becoming self reliant in our food production, it has forced us to depend on foreign countries. The social inequalities and environmental degradation causes by green revolution is well documented. Instead of reviewing this impacts we have embraced for another technology that is developed by Transnationals.

This new technology basically differs from Green revolutions in many aspects. The technology of green revolution was developed

by quasi V N bodies and industrialised countries wherein Transnational companies played the role in background. In contrast the gene revolution is controlled by 30 Transnational companies that are in bio-technology. They are in the technology to make profits for their share holders. They have invested enormously to develop the technology. We in India or poor countries assume that this technology will help us to solve our problems, it is too naive, and unrealistic. Because the Transnationals will oblige only when they can earn enormous profits. Obviously Pepsico is here to increase the profits of its company, the prosperity for farmers will remain the dream that will remain the dream that will never come true.

The impact of biotechnology is beyond comprehension. The green revolution affected only wheat, rice and maize. But the biotechnology will penetrate every aspect of agriculture, from cereals, millets staple crops to oil seeds. The application can be so vast that new crops can be created. It is due to this all pervading (Characteristic) Phenomenon we say that it is going to create total change, revolutionising our agriculture.

There are already some indications as to where these changes will take us. The Transnationals like Unilives has already produced thaumatin sweetnes from a fruit of West African rain forest shrub. This is 250 times sweeter than sugar, that can be manufactured in factories in developed countries with biotechnology. This product will enter market within years displacing the traditional sugar producing countries. Within no time these countries will suffer, shuttering their economy.

It is a very frightening picture, but it is definite that the new gene revolution will hit the third world poor peasants' more than any other group. In our country farmers will be buying seeds, pesticides and herbicides from these transnationals. In fact it will accelerate the dangerous effects of green revolution. Even if Pepsico in Punjab suffers a loss, which is unlikely, it is not going to loose because of two reasons. First, it has become increasingly difficult for Transnational Gaints to experiment the biotechnology in their native countries because of regorous laws and regulations. Those countries are terribly afraid of the release of uncontrollable new organisms into environment. Because even

scientists do not know how it will react so, it is better to experiment in poorer countries where there are hardly any regulations. Thus Pepsico will be free to experiment in Punjab, using our crops land as guinney pigs. Though government may say that the Voltas and Punjab Agro is there to collaborate, to supervise, it is doubtful whether they can tame these gaint.

The second factor is that even if the Transnational succeed in Biotechnology, to manufacture they need germplasm of seeds, that exists only in poorer countries. During the green revolution era the International Agricultural Research centres have stolen the indigenous seeds materials and transferred them to Transnationals in the name of 'exchange' for scientific purposes. However, this stolen seeds may not be enough, or the germplasm will loose vitality. So there is need to constantly restock the material. But as clever businessman they are aware that if genetically rich but economically poor countries may in future decline to share the 'genes'. So before time runs out it is better to grab from them. The Pepsico and the @ Cococola, which is waiting will do the collection of germplasm from our country's diverse genetic heritage. We know very well that they will vehemently contradict this statement. As shrewed banias' they will never reveal their colors.

At this stage it will be appropriate to quote a statement from one of the Transnationals in biotech. The ICI (Imperial Chemical Industry) spokesman said "I don't think we will ever get to the stage where ICI can squeeze the balls of every farmers in the world, because every other company will be doing the same thing. Obviously we know what are their interest to assist poor farmers in third world.

The westerners first came as merchants, then became colonizers, After independence in post colonial era the same merchant came with industrial technology that lured us, then came the green Revolution that lured our farmers and converted the farm and farmer into

Western Commercial agriculture. But we never saw the merchant. Now the same merchant has come with glittering product under the guise of biotechnology. He says it will solve all our problems. Our politicians have already decided to buy his product. Now it is the farmer, and our land that will suffer at the mercy of Western Transnational Merchants.

On Baisakhi day, the harvest of 'seeds' and 'Prosperity' is for the pepticolas and other Transnationals that are coming with false promise.

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## BIO TECHNOLOGY IN AGRICULTURE

### THE POLICY OPTIONS FOR INDIA

- By Pandurang Hegde

India is predominantly an agrarian society with 70 percent of people depending on agriculture. The rising population has not only created unemployment but it has also created an unprecedented demand of food grains. To meet this demand the policy makers choose modern technology to be implemented in the field of food production. Introduction of new technology has its own implications and it becomes very important as it affects large number of people. We already have the experience of green Revolution before us. No doubt it has produced more food, but whether it has reached the hungry man is doubtful. Introduction of Green Revolution technology has affected adversely. In the light of this experience we should try to develop a bio-technology policy that takes care of large number of people, protecting the needs of small farmers, and landless labourers.

Among under developed countries India emerges as a leading country that has strived to develop indigenous biotechnology. While keeping track of the trends in biotechnology development all over the world India was perhaps the first to establish National Biotechnology is formed under the Ministry of Science and Technology. India is also helping other developing countries and in international co-operation through International Centre for Genetic Engineering and Biotechnology, at its head quarters in New Delhi.

India has potential to develop bio-technology to solve the problem in raising agriculture yields without increase in costs. The department is pursuing research to evolve new varieties of crops and in the field of tissue culture. These are very important areas as development of waste lands and contribution of tissue culture seems to provide an answer to environmental rehabilitation. The policy makers and scientists should use biotech as a tool to help farmers. It will be useful only with additional social reforms, like distribution of land.

However, in order to succeed in these programmes we need the genetic resources. This is the building block of biotechnology. India can claim that it has wide diversity of these genetic resources. But in reality we have lost many of them and are still in the process of losing this diversity. The process has been started as an after effect of green revolution technology. The world Bank funded and framed National Seed Policies are penetrating deep into remote villages displacing indigenous varieties. There is an urgent need to protect this disappearing genetic diversity.

The only edge we have in the race of bio-technology over Transnational Corporations is; the hold over genetic resources, we should strengthen this base following the footsteps of Nicaragua and Ethiopia. These two countries have established excellent methods of preserving genetic resources Nicaragua spends almost 50% of its agricultural budget on preserving genetic diversity. India has two gene banks one in Delhi and in Bangalore. In addition to this our policy should aim at preserving all the available germplasms so that it puts our biotech on a sound footing.

Biotechnology promises a large benefit but the research and development poses very serious risks. It is hazardous because of the possibility of releasing micro organisms into environment. The scientists in developed countries are also unaware and are not sure how these altered micro organisms will behave outside the containment. Though scientists differ in their views about its danger, we should take all the necessary precautions while conducting research in our country. Realising this hazard many developed countries have rigid regulations on research. Denmark has totally banned the release of micro-organisms into environment. The policy should constitute a working group that is capable of looking these aspects in research. In addition to scientists this group should include an environmentalist to assess the risk.

After successfully developing biotechnology the difficult part is diffusion and taking it to people is very crucial. If it is handed over to commercial houses; it poses the problem of privitising the technology developed from public money. There is also an additional problem, if these private industries replace Transnationals what is the benefit to common farmers? It is essential to formulate a policy that does not end up in centralising the process. We should

aim at decentralisation of control of technology, in addition to diffusion which is purely a commercial venture.

The policy should also take care of the possible impact of introduction of biotechnology products. The possible impact assessment should be related to technological, social and economic factors. The option is to initiate a process of impact assessment before introducing the product. This becomes essential to check the possible dangers it might pose to certain groups or to the environment.

It is possible that tissue culture methods propagated by biotechnology is in fact an acceleration of photosynthesis process to increase yields. But this increase will come only through heavy inputs of water and nutrients. Obviously, this will lead to further dependency on fertilisers and irrigation. Thus accelerating the conflict over natural resources. Again, there is the problem of increased vulnerability. The tissue culture plants or crop varieties will be developed from single super genes. If this is propagated on a large scale, in times of disease and pests the whole crop may be destroyed. Thus reducing our capacities through dubious elite seeds of biotechnology. This technology should not add to the problems of green Revolution.

The general impact on society and specific impact on particular groups are very important. The seed developed may make the farmer entirely dependent on a single source of supply. He is more vulnerable. The impact on women is difficult to assess but it seems they are going to be effected adversely. For example the super high breed cow developed to yield 20-40% more milk will create additional need for fodder. The work-load of women will increase. These assessments will help to word off negative impacts of technology.

It seems our policy makers are in a great hurry and are already in the process of ignoring these crucial issues. Our prime-minister is waiting impatiently to diffuse these technologies in rural India. But instead of people oriented biotechnology we are already heading

for anti people technology policy that is tilted towards exports of processed agricultural products. Martin Kenny, a scientist said "Technically simple projects are not supported". It is the scientists with extensive credentials, following the U.S. model, who impress politicians and continue to extract considerable funding, while accomplishing little that is applicable to the needs of the vast majority of the citizens".

It is this U.S. model that impressed Prime Minister Rajiv Gandhi during his visit to states led to signing of Gandhi-Regan Science and Technology initiative that includes biotechnology. The recent entry of Pepsico is the result of such initiative.

The present biotechnology policy in India has not only let down the small farmers, women in India but it has also let down the developing countries, who pinned their hopes behind us to provide a leadership at international level to fight the conflict over bio-technology.

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## THE GENETIC IMPERIALISM IN BIOTECHNOLOGY:

- By Pandurang Hegde

The recent developments in biotechnology and its application in agriculture has opened up new areas and possibilities to tackle the problem of hunger. It is claimed that biotechnology will solve the food problem by increasing food production and reducing the costs. They claim that through genetic engineering disease resistant and fertilizer fixing seeds will be developed that will decrease the cost of inputs. The most unique characteristic of this revolution is that it encompasses every area from agriculture to forestry, waste lands and animal husbandry. India is one of the leading third world country that is trying to catch up with the developed nations and Trans National Corporations in developing indigenous biotechnology.

The success of biotechnology in agriculture depends on the access to genetic resources. The germplasm in the seed which contains the genetic code is the basic raw materials for bio-technology. To develop a disease resistant or drought resistant seed the scientists require a wide range of genetic material. The present interest in seeds and genetic resources expressed by developed nations is motivated by a selfish interest to get hold over the basic raw material. The transnational Corporations are also behind their government because whoever controls the genetic resources and biotechnology is going to rule the world in future. In addition to financial gains it will provide power to rule nations, especially poor countries who are always in need of food. Biotechnology is a tool to impose genetic imperialism.

India is one of those country in the world that can boast of genetic diversity. But if we look back and read the history we realise that the genetic imperialism started with British rule, they were the first rulers in India to have initiated a systematic process of destroying the diversity. Their first target was tropical forests. They cleared natural forests to be replaced with monoculture teak plantations. Even before understanding the diverse flora and fauna they forced extinction of species. They replace

the sensitive tropical shola forests of western ghats and Assam to plant tea, they established coffee estates. They forced people to grow indigo. All this was aimed at making money from our soil. The Royal Botanical Garden at Kew in England was established in eighteenth century to assess the value of commercial species. These events indicates the power of genetic resources was well recognised during colonial period.

The introduction of green revolution and hybrid seeds (High Responsive seeds) in wheat and paddy destroyed our foundation of biological diversity. The farmers had developed traditional practices producing indigenous seeds. It accomodate the different soil, moisture and rainfall patterns prevailing in various parts of India. But all these genetic diversity was loss in a matter of few years. India possessed 30,000 varieties of rice. But today it has only 30-40 varieties and these are also disappearing. Other crops have also met the same fate as hybrid varieties drove the traditional seeds. The narrow genetic base is very dangerous because it can be damaged by pests leading to failure of crops.

The United States realised the grove danger of this narrow genetic base in late seventies and early eighties. A virulent strain of southern corn blight raised scare in USA and forced them to collect the germplasms from other country. These developed nations have acquired the capability of becoming grain basket of world because their agricultural crops are totally developed from the infusion of genetic material from third world countries.

Though it is very difficult to assess the annual returns of these infusion of genetic resources into crops cultivated in rich nations, it is said to be very high in monetary terms. According to Kloppenberg & Kleiman, well known agricultural economists from USA, "The contribution of Turkish wheat varieties genes for resistance to stripe rust disease is estimated worth \$ 50 million per year USA. The Indian selection that provided American Sorghums with resistance to greenbug has resulted in \$ 12 million in yearly benefit to American agriculture". These genetic material that supports the bread basket was received as free goods from third world nations.

This fact proves that the poor countries are 'gene-rich' countries with biological diversity. But the rich nations are 'gene-poor'. But these nations are very calculative and they have devised a means to appropriate the genes from those areas of biological diversity. They have established International Agricultural Research Centres in various parts of world and the Rockefeller, Ford Foundations financed these new institutions. These institutions collected the genetic resources from 'gene rich' poor countries for the purpose of research. Later these genetic resources found their way to developed nations and Transnational Corporations. For example International Rice Research Station at Manila is one of such centres. It has collected 70,000 varieties of rice from all over Asia, including 15,000 from India. Any country can seek and get access to genetic resources. But it is the great transnational Corporations of developed nations who use these and manufacture hybrid seeds to be sold to high profits to poor countries.

Only in recent years the 'gene-rich' countries have realised this exploitation process. This genetic imperialism has led to a hot debate as to who owns this 'genetic' materials. The rich nations are trying to dominate as they have already started 'Patenting' the new products of biotechnology where they have used genetic material from third world nation. To secure their monopoly they are forcing countries like India to accept the patent laws and Intellectual property Rights. The recent controversy over this is basically motivated by the advances in biotechnology.

The genetic imperialism and the present scramble for gaining access to genetic resources manifest in various forms and from various corners. The present economic policies in India is laid down by World Bank and International Monetary Fund. These Organisations have elsewhere played game to help their masters. In Bolivia about 4 millions acres of forest was set aside by government to preserve biological diversity, with only access to USA. This was purchased to set off Bolivias debt obligations of \$ 4 billion.

In India the recent seeds policy under which import of hybrid seeds are allowed is obviously a opening up suggestion from World Bank followed sincerely by our government. The world Bank is financing a massive Rs. 2,396 million programme of Third National seeds Project. The main emphasis is 'stimulating greater private sector investment in the seed industry', obviously inviting the Transnationals to penetrate into our country with genetic imperialism. Instead of raising yield this will further narrow our genetic base, exposing us to catastrophes.

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## BIODIVERSITY FOR PROFIT

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The historic conference to save the planet earth from destruction, held at Rio is over. Debates will continue to assess the outcome of the summit. In this conference two important treaties were signed by 142 countries. One is on climate change and global warming. The second treaty is on Biodiversity. The Biodiversity convention was discussed at great length and there was controversy as United States refused to sign this convention.

In recent years the issue of Biodiversity has attained importance. The trend in agriculture and forestry over last three decades has been one of the major cause for depletion of genetic diversity. The agriculture in the poorer countries has been invaded by high yielding varieties or hybrids. This has led to disappearance of countless varieties of crops, traditionally grown by farmers. Similarly the trend in forestry is towards monoculture plantations. In tropical countries the existing diverse forest wealth is clearfelled to establish teak or eucalypts plantations. The conversion of natural forests was seen as a way to optimise revenue collection by planting monocultures that can yield timber and revenue. Thus the existing biodiversity of natural ecosystem was totally ignored and the commercial objective got more importance in the implementation of forestry programmes.

Only in recent years the scientists discovered that the diversity on Earth, in both plant and animal kingdom is getting extinct at a faster rate. They felt that in case of plant resources, some of them are getting extinct even before they are identified for use. As they realised the enormous potential of this diversity in serving human beings, the concern to preserve the Biodiversity became imminent. The Biodiversity Convention, discussed at Rio is an attempt towards conserving the genetic resources and to evolve strategies towards working together to attain the objective of conservation of biological diversity.

The convention on biodiversity envisages the role of local communities and tribals in conservation and it also address to the forces that deplete these resources. The important aspect of agreement is the assertion that biological resources are subject to national sovereignty in which they

are found. However, the industrialised countries were able to exert pressure and they succeeded in changing certain aspects of Biodiversity convention to maintain their strong hold on the germ-plasm collected from 'gene rich' poor countries and stored in the gene banks of 'gene poor' rich industrialised nations.

The abundance of grain in United States or in West European countries can be attributed mainly to the manipulation of seeds collected from southern countries, known as centre of origin. The Northern countries realised the danger of losing control over the seeds, which was essential to enthrone new vigour to their hybrids. They have systematically collected the seeds from poor southern countries through International Agricultural Research Centres like ICRISAT, IRRI and CIMMYT. As reported by GRAIN (Genetic Resources Action International) a non governmental organisation from Spain, half of these collected crop seeds is stored in Northern Gene Banks. This wealth relating to staple crops of millions of people and animal species does not fall under the scope of Biodiversity convention.

What does this exclusion mean to third world farmers and countries? Obviously it means the Northern countries which are utilising the seeds from poorer countries will never pay the value for using these seeds. According to GRAIN, U.S. Agriculture benefits a minimum of U.S. \$ 680 million every year from the use of seeds and genetic material that originated in southern countries. Similarly Italy's wheat crop is dependent on wheat varieties derived from southern countries with an value of U.S. \$ 300 million per year.

During Green Revolution era thousands of paddy varieties from India and other tropical countries were collected by IRRI (International Rice Research Institute). Similarly wheat varieties from Mexico were taken by the International Agencies. They were collected from different countries, but stored in the Gene Banks of rich Northern countries. The rationale would be to give access and right of these countries from where the seeds are collected. But by excluding this whole wealth stored in Gene Banks, the Biodiversity convention has deprived the claims of poorer countries from where the seeds originated.

The poorer countries gave these genetic material with good intention and under trust. This trust is being betrayed by rich nations who will use these material to produce new varieties and secure patent on them. This will deprive millions of farmers their right over the seeds which was evolved by their ancestors. The rich nations with the tool of genetic engineering would manipulate these wealth and secure patents on forms of crops, the origin of which is southern countries. They are exerting pressure on poorer countries to accept the patent laws and Intellectual Property Rights to reap the profits. It is ironical indeed, that the rich nations are openly robbing the genetic material collected from third world countries. These governments are handing over these genetic material to multinational seed companies so that they can reap profits.

The issue of Biodiversity is crucial to poorer countries for their own survival. They need to regenerate the crops that are on the verge of extinction. The narrow crop genetic base will be a threat to food security, threatening to wipe out crops. However, a diversified crops in agriculture will pave way for self reliant food security. In contrast to this, the rich nations view conserving biodiversity as a tool to acquire access to the genetic diversity and to commercialise them through patent and GATT. Their perception is on the profits that can be derived from these genetic resources. It is ironical that while alleging that poorer countries follow unfair trade practices, the rich nations are openly following the same practices towards biodiversity of the 'gene rich' countries.

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## THE WIDENING GAP BETWEEN AGRICULTURE AND FORESTRY

- By Pandurang Hegde

The destruction of forest resources at an alarming rate of 13 lakhs hectares every year in our country needs no proof to bring out the seriousness of the situation. In most part of the country from the Himalayas to Kanyakumari the barren landscape stands as a testimony to the act of countrymen. The recurring drought and floods covering large areas of the country has affected agriculture and human population. There is a growing awareness among policy makers and laymen regarding the destruction of the forest resources. However, there is lack of awareness as regards the interlinkage between forests and agriculture.

From centuries the Indian agriculture was dependent on the forest resources. In the hilly forest tracts the forest provides the necessary inputs for carrying on agricultural operations. In Himalayas the forest provides fodder for cattle, fuelwood to cook food and it provides water to the fields. In western ghats, south India farmers bring green leaves to fertilise their fields. At many places the villagers bring the forest soil and use it to fertilise their field. The farmers are entirely dependent on forests to get agricultural implements. Many farmers are dependent on forests to build their houses or huts,

In fact the entire life of farmers from agricultural operations to building a dwelling is entirely dependent on the availability of the forest resource. In tribal areas this dependency factor is more because the entire tribal life and economy rests on utilising the resources available from the forests.

This link between forests and agriculture was disturbed during British rule as the colonial rulers demarcated the forest and agricultural land. Their motive was to utilise the timber to earn revenue. They also initiated a policy of clearfelling natural forests and converting them into monoculture plantations of teak and eucalyptus. This deliberate policy of alienation of farmers from forests provoked resistance in various parts of the country. However, farmers resistance was crushed by British force,

Ironically the independent India pursued the same colonial forest policy and has accelerated the process of deforestation initiated by Britishers. We have lost more forest land in the post independence era than the three hundred years of British rule. The forest department became a policing agency to keep watch on the villagers. This policy has successfully alienated the rural population from forest resources. Farmers feel that it is not their duty to protect forests. For them the 'forests' belong to the government. A farmer can not take wood from the forest to make agricultural equipment. He can not construct his house or a small hut from the wood that is available from the forests. He can not graze the cattle in the forests. All the access to forests is denied to farmers.

But in reality the farmer observes that these 'Policing' rules and regulations are thrown to wind for the benefit of rich people. The contractor is allowed to take truck loads of wood and timber, the forest guards and officials build palatial buildings. But a poor farmer is harassed if he ventures to construct a hut. The large industrial houses are allowed free access and concessional lease to exploit forest resources. All these destructive forces has gained predominance in post independence period leading to destruction of forest resources. The farmers and tribals who were once custodians of forests have been treated as villains. And the real culprits get away easily. This reality has forced the farmers to view 'forests' as something that does not belong to them.

The destruction of forests has had catastrophic affects on Indian agriculture. The drying up of water resources, non-availability of fodder and fuelwood has forced them to live a life to walk distances to get fuelwood. In addition to this human misery the affect on moisture retaining capacity, the role of maintaining the hydrological water cycle is disturbed with the destruction of forests. This has led to long term ill effects on agriculture.

The recent trends of 'greening' India is another story of anti farmer policy of forest department all over India. In all most all parts of the country the afforestation is done to help the forest based industries. There is no emphasis on helping agricultural land.

The trees that will provide fodder for cattle, those which will be useful as green leaf fertiliser or can be used as pesticides is available in abundance. In fact, they are helpful to farmers and he will take interest in protecting them. Instead the afforestation emphasis is on trees like eucalyptus, acacia, teak that helps industries.

Even after 40 years the government has not taken steps to integrate forestry and agriculture. The trend is obviously towards widening the gap between forestry and agriculture. It is going to affect the entire farming community in India.

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## CASE STUDY

### A HEALTHY FARM IN TROPICS

Gurunath's farm is situated on the slopes of a mountain in Mattighatta village. The undulating hills surrounding the farm is covered by ever-green tropical forests. In midst of these forests, small patches on gradual slopes are cleared for cultivation. The village is distributed on the slopes with the farm house built separately near owners' cultivable land.

The farm has a approach road during summer/winter months. But it is cut off for four months during monsoon due to heavy rain. Gurunath and his two brothers stay in the farm together. He is a graduate and is elected Chairman of the local level governing unit, Mandal Panchayat.

The area is at an altitude of 150 metres from the sea level. It represents a part of North Kanara District in Karnataka State, South India. North Kanara District is adjacent to the sea on west coast. It has a very rich natural resource base as tropical forests dominate the topography. In comparison with rest of India, this part has fairly large forest area and a low population density of 104 persons per square kilometre.

Gurunath's farm is located in the middle of rolling hills. The climate is constant throughout the year. The monsoon rains are heavy and it provides water to cultivate land. The rainy season starts in June and it continues till October with annual rainfall of 4000 mms. The agricultural activities start with rainy season and harvesting during dry months in December and January.

Gurunath has 15 acres of farm land located on the slopes. These slopes are carefully terraced to cultivate different crops to suit the climate. The terracing of this slopes has been done to prevent soil erosion and to harvest rain water. This was developed about three hundred years back and the farming system has developed gradually over three centuries. The traditional skill and knowledge of Gurunath's ancestors has been passed on for generations in stabilising the delicate tropical ecosystem.

In addition to terracing the slopes, the traditional cultivation has maintained a delicate balance between the surrounding tropical forests and the agricultural methods. These forests provide sustainable inputs to the farms agricultural operations. Two major inputs are, providing organic matter for composting and secondly providing a regular source of water through perennial streams to irrigate fields during dry period. At macro level the surrounding forests create a micro climate to grow certain type of crops.

The land use of Gurunath's farm is divided carefully into cash crops and food staples. Out of a total of 15 acres of cultivable land, a major share of 6 acres is allotted to grow rice, a food crop. Next priority is for cash crop, arecanut (Areca Catechu) cultivation. The third area of priority is to grow coconut palm, a cash crop as well as food crop. This also provides source of vegetable oil for the family. He also grows sugarcane on a small part of his field to produce sufficient jaggery (Sugar Syrup) for his family.

The rice and sugarcane crop is rainfed and arecanut, coconut palm, is irrigated through stream water from the forest during dry season.

The traditional land use has been evolved to provide the farm house with necessary staples and cash crop. Over these years this land use has remained unchanged. However, there has been a slight shift to cultivating new varieties of rice in recent years.

## I. Cultivation of Crops

### a. Arecanut ( Areca Catechu )

A part of the land on terraced slopes is cultivated by arecanut trees. These trees are 30-40 feet tall imitating the tropical forests. They start yielding by seventh year and have a life span of 35-40 years. The crop is harvested once in a year during December and January. The saplings are planted every year in the gaps and older trees are replaced in a regular cycle. Care is taken regularly to tend these trees through providing compost manure and green leaves every alternate year. Weeds are controlled by mulching dry leaves from forest. There is no need for pesticides for this annual crop.

However, to prevent fungus attack on crops a mixture of copper sulphate mixed with lime is sprayed during rainy season. The average yield of arecanut per acre is 5 quintals. Traditionally arecanut and bannana was grown on the same plot of land. Bannana leaves providing shade to areca roots. Within last ten years the banana has become extinct due to virus disease. The disappearance of bannana has affected the yield of areca, and has deprived farmer of cash income from sale of bannana.

b. Rice

Rice cultivation is done on the small terraced fields. Rice saplings from nurseries are transplanted during rainy season. The field is ploughed by draut animal (bullocks). The compost manure is given to paddy field before transplantation. He does not use chemical fertilizer. The average yield is 12-13 quintals per acre.

The rice cultivation has remained same except the seeds. Till Gurunath's father was alive, they cultivated indigenous seeds that gave less yield, but was resistant to disease. But after his father's death ( 6 years back) Gurunath has shifted to new hybrid high input varieties of rice. He is compelled to use pesticides since the introduction of high input seeds. However, he does not use fertilizer as specified by the government extension services.

c. Coconut Palm

Gurunath has one and half acre of coconut garden with 150 grown up trees. This is a 30 years old garden yielding 3000 nuts on an average every year. It is irrigated during dry season through streams. The compost manure and green leaf is given every alternate year. These trees have to be tendered every year and had to be cleaned to help the emergence of flowering pods.

d. Sugarcane

Sugarcane is planted on a small patch of land (approximately 20 cents). The crop is provided with organic manure and water. It gets ready after 11 months. It is harvested and fed into local jaggery unit. On an average 500 kg (5 quintals) of jaggery(syrup) is produced from sugarcane. This is consumed by the family and labourers.

e. **Betle Vine Plant (Piper betle)**

Betle leaves is another small cash crop from this farm. The betle vine grows on areca trees. It is harvested six times in a year. It is purely a cash crop. But this can also be used to manufacture biocides.

f. **Black gram ( Phaseolus mungo)**

After harvesting rice in the field, black-gram is sown using the available moisture. It fixes nitrogen and provides a source of protein to the family. About half quintal of blackgram is harvested from one acre. The waste is used as fodder for livestock.

g. **Vegetables**

Vegetable is grown within the farm throughout year. They do not grow them separately, but it is part of the agricultural activities. Some of the vegetables provided by trees are, drumstick, jack fruit, etc.

In addition to these the women in the family grow varieties of green leafy vegetables, and vegetables like Ladyfinger, bitter-gourd, cucumber etc., they also get vegetables from nearby forests.

h. **Fruits**

The farm has mango, jack, guava and gooseberry trees around the boundary.

II. **Livestock**

This is an integral part of Gurunath's farm. He has a total of 18 heads of cattle including six buffaloes. The buffalo provides source of milk to the family. The cattle is mainly of indigenous species. They have two pairs of bullocks to work as draft animals on field. The rest is kept for producing compost manure.

The cattle is left in the forest to graze. They return during evening and are given fodder from agricultural waste. The milching animal is provided with cattle feed purchased from market. About 20 quintals of cattle feed is purchased from the market. In addition to this the coconut cake, residue from crops is used as fodder (hay, blackgram wastes etc.).

The milk products like curd, butter, and butter oil is a regular source of nutrition to the family. Gurunath's family is vegetarian. So they use livestock for milk and manure. They use the cowdung to run a Bio-gas plant that provides cooking fuel for the family allround the year.

### III. Inputs

As discussed earlier, all the crops are grown with organic manure and internal inputs generated by farm activities. The ground of cattle shed is covered by green leaves (brought from forest) and grass from June to December. Cattle shed is cleaned every day and the cowdung is fed to bio-gas plant, the leaves are dumped in compost pit. The slurry from gas plant is mixed in compost pit. This makes an excellent compost manure of 40,000 Kgs for six months. This is the main input to cash crops like areca-nut trees.

The manure produced during rest of the period is used mainly for rice fields. In addition to this they fetch humus from the forest and use it for coconut trees.

During dry months it is necessary to provide water for perennial crops like arecanut and coconut trees. The stream emerging from forest provides perennial water. This is equitably distributed by 12 farms in this village.

The external inputs are mainly in terms of rice seed, and cattle feed.

### IV. Economic Condition

Gurunath and his family lead a normal middle income life, representing the average living standard in the surrounding area. Rational land use with cash crop and staple food provides a regular source of stability to the farm. The arecanut rates fluctuate every year and effects the income generation. However, the coconut has constant market and is a dependable source of income. He extracts oil from dry coconut. He sells oil and

retains the oil cake to use it as feed for cattle. His farm provides regular employment of about 1200 mandays per year. He gives the labour a daily wage rate that exceeds the minimum rate fixed by government.

### Conclusion

The local agricultural extension agencies of government propagate the use of fertilizer and pesticides. In spite of this propaganda Gurunath, being the Chairman of Panchayat, is convinced that traditional methods of cultivation and organic manure is more appropriate for his farm.

Gurunath's farm is a healthy farm, because it is self reliant on internal inputs or from inputs available from surroundings. The nutrient recycling from plant and animal waste helps to maintain the health of soil and to produce crops on sustainable basis. It is a rare integration of livestock, cash crop and staple food into sustainable agricultural system. Due to this wholistic approach, the traditional method has survived centuries of cultivation of cultivation in a nutrient deficient soils of tropical region. The arecanut and coconut trees form a garden that imitates the surrounding forest canopy. These permanent tree crops produce yields for many years.

Nevertheless, this healthy farm is dependent on two major factors. First it is essential to have a dense forest cover to provide water and organic matter.

Second factor is maintaining and improving the traditional skills and knowledge developed over generations. There are already indications that the educated Gurunath and his brothers are taking to high yielding seeds of rice and pesticides harming the health of farm leading erosion of traditional sustainable agriculture.

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## WYNAD :- FROM SUSTAINABLE TO DESTRUCTIVE FORESTRY

### 1.00 Introduction :

The tropical forests are mainly located in western ghats, adjacent to west coast in South India. The State of Kerala in South India has a major share of 42 per cent (21861 Sq.Kms.) of the total geographical area of western ghats. The forests in Kerala are of a wide variety, ranging from tropical rain forests to deciduous type. These forests are rich in flora and fauna and some species can only be located in this area. However, in recent times the state of forests has changed drastically. The commercialisation introduced by Britishers, establishment of tea and coffee plantations and encroachment by non-tribals has led to destruction of these tropical forest resource. Though the movement like silent valley in Kerala has led to awareness among people, the forest destruction still continues. The researchers involved in forest issues, state that the percentage of forests in Kerala is 9 per cent to the total geographical area. However, the activists involved in protection of forests estimate that the natural, prime tropical forest that perform the ecological function of soil and water conservation is only two per cent of the geographical area. If we accept the fact that as a rule, scientists, argue for 66 per cent of forest cover in hilly region, the deficit is enormous in Kerala and in western ghats. The trend of destruction of tropical forests in Kerala, and western ghats is alarming. As a ray of hope, in some areas peoples movement has come up against the deforestation process. One such peoples movement is going on in Wynad district, Kerala. Similarly there were other attempts by villagers in Kottayam district.

### 1.2 Wynad :

Wynad, with an area of 2126 Sq. kilometers and a population of 6 lakhs is one of the hilly districts of Kerala. This small district is situated on an elevated plateau, with an altitude of 700 meters. It receives heavy rainfall from 3000 mms. to 5000 mms. The district has very rich tropical forests, most of it the tropical

ever green and they deciduous type. Many small rivers originate from this hilly area and it forms one of the main catchment area of river Kaveri, the main river of South India. The gentle hills makes way for broad fertile valleys. These valleys is used for paddy cultivation. There are tribals who specifically have skill and knowledge of cultivating varieties of paddy. The high yields of paddy due to fertile soil in the valleys is a special features of this district. And it is this speciality that has brought the name 'Wynad'. Wynad in Malayalam means "Land of Paddy". Even with the official propagation of high yielding varieties of paddy, people from this paddy land still cultivate varieties of indige-nous varieties.

The rich tropical forests of evergreen and deciduous type, grass lands, and natural swamps in this region has supported a varied wild life from Elephants, Tiger and Lion tailed Monkey.

## 2.00 History :

Wynad has a rich history ranging from neolithic period to stone age. Stone carvings in Etakkal caves are traced to 6th and 7th Century A.D. The old ruins reveal the existance of Jainism in these areas. This area proved to be a good hinterland manuf-acturing species, especially cardamom and pepper. The area also exported rose-wood and Ebony timber to countries beyond India. The area was well known for the availability of natural teak, which was exported to Middle East countries for building ships. It was ruled by local feudal lords in 10th Century A.D. Around 1760's Tippu Sultan took control of Wynad. After the defeat of Tippu the area came under the direct control of Britishers in 1801.

2.1 Before the arrival of Britishers, about 16 different tribal groups lived in Wynad. Among them Kurichians were skilled in cultivating paddy in fertile valleys and swamps. Most of other tribal groups lived out of the forest produce. There were tribal groups like Jenu Kurubas and Kata Naikas, who were primarily food gathering tribes, never cultivating land. Before the intervention of British-ers, the local feudal lords or Tippu's rule never brought in any drastic pressure on forests. The pattern of land use also had

stabilised, mainly in flat valley land. This system of agriculture, was dependent on nearby natural forests, as they brought down fertile top soil and provided regular source of water, throughout the year. During non-agricultural season, the forest provided enough opportunity for employment and livelihood.

2.2 The valuable teak of Wynad attracted many rulers. As the stock of teak was dwindling, Tippu (the King) declared teak as "ROYAL TREE", so as to preserve and protect the remaining teak. A royalty on teak was also introduced by Tippu. But it became unpopular, and was abolished in 1823. The drastic change in the exploitation of forests was introduced only after Britishers intervened in this area. From 1823 to 1859 the Britishers felled the valuable teak and other species under the "stump fee system". The forest department started extracting teak terminalia, pterocarpus near the cart roads from 1870's. In addition to exploitation of timber and wood, the Britishers introduced commercial plantations of coffee on a large scale in 1840's. This led to conversion of large areas of natural tropical forests into monoculture commercial plantations. The introduction of Tea estates in early 20th century led to disappearance of natural forests on a large scale. In many cases the Britishers acquired the natural forest land from local Nair families on long lease assuring them that they will not change the nature of the forests. However, they bothered least to adhere to this assurance and clear felled the natural forests to bring up tea plantations. From the legal status of lease-holders, they became the owners of these land. Some Nair families went to court in Calicut, but they lost the case as the British lease-holders were declared as legal owners. (Harrisons & Malayan case in Calicut Court). These commercial plantations created demand for labourers, who migrated from other areas or the tribals were taken in as labourers to work in these plantations.

### 3.00 Meddling with Forestry

The greed and need of British forest officers to earn revenue and timber from Wynad led to over extraction of trees. The inspection notes of 1890's say "desolutry removal of trees over- large area had resulted in profuse invasion of Lantana weed". Similarly

they recognised the fact that valuable teak had stopped its natural regeneration and there were shortage of teak. This led to the innovative ideas of artificial regeneration of teak. In 1860 a small area of 40 acres of natural forests was clear felled in Kottādi area in parappa Reserve Forests. This area was planted with teak by Mr. Cleghorn and by 1871 this was declared a failure. Similarly, small area was planted with rose wood during the same time, and this also met with failure. Similarly, the effort to raise teak plantations in Allagadde in Begur reserve Forests, in Kannothe reserve forest during 1872 to 1879 resulted in failures. Realising from these repeated failures, the forest department proposed a change in working in 1895. Accordingly the timber extraction was restricted to specific localities and rotation under selection felling was introduced. The dry, diseased and mature trees were only removed and some prime forest areas were declared as protected forests. (KANNOTH, PERIA AND KOTTIYOOR).

### 3.1 Introduction of Commercial Forestry in Wynad:

The above details of failures laid the shaky foundations for so called scientific forestry in Wynad. A working plan for the deciduous forests of Wynad plateau was written by Mr. J. Coode in 1930. However, large areas of natural forests were converted into teak during 1921 to 1928.

Some of the basic issues of this working plan are as follows :-

#### PART-II

Future Management discussed and prescribed

#### Chapter-I Basis of Proposals.

##### I. General Objectives of Management.

##### 1. Improvement of the Forest

(a) This will be achieved by conversion of the existing natural crop into more valuable plantations, taking at the same time the greatest possible advantage of the local practice of 'PONAM' or Khumri cultivation, whereby food crops are grown in conjunction with regeneration operations to the material benefit of Ponamdars and department.

(b) Regulated fellings in other areas of mature and marketable trees, which would otherwise deteriorate in the forest, with particular attention paid to the betterment of advanced growth and establishment of natural regeneration of more important species.

(c) Tending existing plantations

(d) Protection.

2. Catering the needs of local population:

These needs will be met by organising the supply of forest produce and grazing facilities.

3. Realisation of Revenue ;

Revenue will be realised as a corollary to the items above.

SECTION -2.

METHODS OF TREATMENT TO BE ADOPTED

- a) Conversion of suitable areas into plantations of teak and other valuable species by clear-felling followed by artificial regeneration of various species in combination with agricultural crops.
- b) Tending and thinning the plantations in accordance with latest silvicultural practice.
- c) Removal of mature and over-mature trees in a manner conducive to the betterment of the forest by system of "selection felling" in areas not suitable for conversion.
- d) Providing for grazing, collection of Minor forest produce and food and
- e) Prescribing measures for protection.

3.2 The above paragraphs brings out the basic objectives of so called 'Scientific forestry'. It is interesting to note that the policy makers in the forest department ignored the mistakes committed by them in the same area during 1820 to 1880. Instead of learning from the experience of failure of teak plantations, attempted by their own people, the forest working plan proposed to convert 29,437 hectares of natural forest into teak plantations. This obviously shows

that the working of forest was not based on 'scientific' principles, but on the main objectives of earning revenue and raising commercial monoculture teak plantations. In order to raise these plantations they used the cow-dung and organic manure in the clearfelled area. Thus, the organic manure was diverted from food production to commercial plantations. In addition to conversion of natural forests, the working plan recommends for 'selection felling', claiming that felling of mature and over mature trees which would deteriorate in the forest- - - - - with attention paid for natural regeneration of important species. This is based on the erroneous assumption that selection felling will lead to natural regeneration. This kind of felling done in 1890, has showed empirically that forest stock is getting depleted (3.00).

### 3.3 Marginalising tribals :

The working plan has least bothered to give protection to tribals. Though clauses like 'grazing and local needs' is included in objectives, the essence of the policy was to marginalise the tribal population. The working plan makes it explicit that the tribes are "the tenants at the will of Forest Department" and that the Britishers are allowing a 'privilege' to them for residing in the forest! The tribals, who are the original inhabitants and land-owners of the forests, were stripped off their source of livelihood and community ownership of forests. This basic change in ownership title did not happen during king's regime, nor during the control of feudal lords.

3.4 These tribals in Wynad, at least some of them were shifting cultivators. This "shifting cultivation" was known as "PONAM" in local language. The forest is cleared on a small patch and millets and fruit, cover is raised on the ash resulting from burning of the debris, with very little actual cultivation of soil. This area is abandoned for 7 to 10 years so that it recoppe nutrients. It is very important to realise that, these tribals never ploughed the land, and their shifting cultivation was a very skilled job, which took care of delicate tropical soil. Due to the low population pressure, this system worked perfectly well, with sustainability aspect built into the system.

The forest officials assumed that the existence of shifting cultivation is a sign of clearfelling of natural forests. They went ahead with conversion of natural forests on the basis that the shifting cultivation has destroyed the natural forest, and that there is a need for artificial plantations. The British Officers never realised that the 'PONAM' cultivation was a very special skilled job, tending the fragile ecosystem of tropical area. Instead, they used this practice to legitimate their method of establishing commercial monoculture plantations on a large scale. They forced the tribals to grow food crops in midst of these plantations for initial period of 3 to 4 years, to control the weed. This provided a cost free method of tending and protecting the departments plantations. The whole process ignored the basic factors of shifting cultivation, which did not disturb the soil. The 'PONAM' cultivation introduced by British forest officials in plantations led to total depletion of fertile soil, making it a non-sustainable land use system. This led to marginalisation of tribal groups, as they became a passive labour force for forest operations, available at a very cheap rate.

#### 4.00 Post Independence forest policy.

The forest policy, and its basic objectives did not change after the country became independent. The area of Wynad became a part of Kerala State. The forest department followed the colonial policy of conversion of natural forests into monoculture teak plantations. The clearfelling went on with more vigour and large areas of natural forests were clear felled. In addition to this, the population explosion in the coastal belt of Kerala led to an influx of large number of non tribals from these coastal area to Wynad. The fear of nationalisation of private (vested) forests led to clearfelling of large tropical forests. This whole process of migration of non tribals, deforestation brought about the commercial crops like tea, rubber, pepper and coffee on a large scale. The then Communist government did not take any action on encroachment of forests. All these resulted in tribals losing their land and forests to non tribals. These tribals became bounded labourers of non tribals and plantation workers. After 1950's

the increased emphasis on 'developing' this hilly area led to building of hydel dams, roads and conversion of natural forests into dairy projects. Thus, the pressure of development projects took toll of natural forests, depleting the resource at a faster rate.

#### 4.1 Affects :

Disturbance of the tropical ecosystems in Wynad started showing results during 1890 (3.00). But, the colonial rulers, and Indian foresters ignored these signs and cleared large areas of natural forests. The monoculture plantations started showing results during 1970's. The tribals who lived on forest fruits, leaves, and tuber, were severally affected. The sustainable use of valley by growing paddy, had a severe set back. The perinnial source of water dried up due to clearing of natural forests. The ponds and tanks dried up. The cultivators who grew two crops of paddy are not in a position to grow even one crop of paddy. The forest produce, on which they survived during off seasons was almost extinct due to plantations. This disrupted the sustainable life style of tribals in Wynad. The change in number of rainy days contributed to dwindling agricultural yields. The introduction of tea, cardamom, rubber and pepper by non tribals resulted in clearing natural vegetation. This resulted in the change of nature of forests, disrupting the ecology of this area, impoverishing the situation of tribals. The wildlife has had to invade the plantations and agricultural land as its habitat was encroached by human beings. All these changes has led to desertification of the area. The situation became precarious in eighties as the wells and springs dried up, resulting in acute shortage of drinking water in dry season. Thus, an area receiving highest rainfall after Cheerapunji (i.e., Iekkad in Wynad) is acute drought in 1986-87. In Saltans Battery, the head quarters of Wynad, drinking water was supplied by tankers for four months. This shows that the hydrological water cycle has broken down, as the underground water is not recharged in recent times. The affects on cash crops is obvious, however, the effect of tribal life is not visible. In 1983-84 the environmental activists discovered that there were deaths (3 people) of Katu Naika

(a tribal group lives on forest, gathering food) due to non availability of fruits, yam and tubers in dry spell. Their life support was eroded by monoculture plantations. Landslides and drought has become a regular phenomenon.

#### 5.00 Peoples Movement;

Mathunga area of Wynad - Mysore highway is a picturesque place with greenery and surrounding hills. Kallur reserve forest comes under this area. Out of the total 1200 acres of reserve forests, 75 per cent was already converted into teak plantations. In August 1980 the forest department earmarked clearfelling of 250 acres in Kallur reserve forests. The people in Naikathi village, adjacent to the reserve forest area were already suffering the adverse impact of deforestation on the agriculture operations. During that time the silent valley controversy in Kerala was at its height and people became aware, and there was an atmosphere of protecting natural forests. The village youth in Naikatti formed Wynad Prakruti Sanmrakshana Samiti to stop the clearfelling of natural forests in Kallur reserve forests. Initially they submitted the memorandum to all the officials and ministers. Subsequently, they organised a strong protest against conversion of natural forests into teak plantations. The tribals and non tribals, people from various political parties, the village Panchayat Chairman, all of them supported Prakruti Sanmrakshana Samiti in their struggle. The months of October and November 1980 saw the hectic activity in Kallur forests and nearby villages. The politicians and leaders were kept in back-seats and ordinary people without any political (link) or strings took the lead in the struggle. The press gave wide coverage of this struggle and many people supported them from all over the state. The constant vigil and pressure of people forced the government to change their decision. The government ordered to cancel the felling in Kallur forests. The people achieved the success and not a single tree was allowed to be axed in the area. The Wynad Prakruti Sanmrakshana Samiti (W.P.S.S.) launched a district wide movement against clearfelling of natural forests. It achieved success in this struggle as the government stopped clearfelling.

### 5.1 Spread of Movement:

The people realised that there is a urgent need to stop all kind of commercial fellings in Wynad. In 1981, the WPSS launched movement against felling of trees in Pulpalli, in Padri reserve forest. They filed a case in the court against fellings. Similarly in 1983, a movement was launched in Thiruneli in Begur reserve forest, the forest department had alloted trees to Plywood factory on the banks of Kalandi river ( a tributary of Kaveri). WPSS started the struggle, submitted memorandums. The people staged peaceful dharana against selection felling in front of District Commissioner's office at Kalpetta. They forced the government to issue an order to stop the selection felling to plywood company .

### 5.2 Peoples movement against eucalyptus;

During the process of these struggles the activists of WPSS came in close contact with tribals. The Thagarppady and Pulkuly about 3000 acres of natural forests was clearfelled, and eucalyptus was planted. This area is adjacent to the valley in which particular Kurdhia tribe cultivated paddy crop. The low lying valley held the fertile soil, washed from the natural forest, where the humus provided a good cover over earth. In Thagarppady an area of about 50 acres paddy was cultivated. The catchment of forests drained into a natural tank, above the paddy land. This tank had water throughout the year and water streams flowed out to paddy fields. This helped cultivation of two harvests of paddy. This, in addition to natural forests supported a population of 500 people, majority of whom were tribals. In pulpally about 90 acres of paddy land was supported by natural tank. The government clearfelled natural forests above the paddy fields in both these areas. The tribals observed that, after 5-7 years the tank started drying up. Gradually, the yields came down to 40 per cent. These tribals realised the danger of eucalyptus monoculture as it took away their livelihood. They showed to the activists of WPSS, their barren paddy fields. The tribals said that they cut eucalyptus trees in dry season and get enough water to quench their thirst. In fact, the tribals demonstrated in front of activists, by felling eucalyptus trees and the water quashed out of the log like water coming from

This revolution by tribals about eucalyptus opened the eyes of activists, who launched a sustained struggle against planting eucalyptus in that area. The tribals convinced many scientists and ecologists as how the water comes out from eucalyptus log like tap water. These practical facts got wide publicity and the WPSS succeeded in pressurising the government to stop planting of eucalyptus.

### 5.3 Movement against Poaching.

Wynad is a part of Nilgiri Biosphere reserve, Wynad is declared as a wildlife sanctuary. There are large number of elephants in this area, adjacent to Karnataka and Tamil Nadu. The activists of WPSS created awareness among people and against poaching. In one case the forest department was involved in trapping elephants; WPSS came to know about the pits being dug deliberately and then announcing that the elephant fell 'accidentally' in the pit. This was the dubious method used, to make money from sale of elephants. WPSS protested against this dubious way of trapping elephants by forest department. They submitted memorandums and staged Satyagraha in front of Range Forest Officer at Kuppadi. A petition was also filed in the court. Thus, these efforts created an awareness and action by local people to save and protect wildlife in Wynad.

### 5.4 Movement against felling in private (vested) forest area

The peoples movement is not only against the policies of state government forest department, but also against felling in private forest areas. In Mananthody taluka, Mr. John owner of Makkimala forests wanted to clearfell about 10 acres of natural forests. In 1984 WPSS filed a case in the High Court of Kerala and got a stay order. There was a solid support from common people, who participated in the activities to protect the forest. They were able to save 400 acres of tropical ever green forest. In May 1985 a spontaneous movement was launched by villagers in Lakkidi. This movement was also against felling of trees in private forests. It is known as Meenakshi Sundar Estate, with an area of 225 acres. This is evergreen forest area said to have been registered as Cardamom estate. However, in reality, it was a forest area. The owner of the estate wanted to clearfell the area and earn revenue by sale of timber. In order to get the permission of government, they connived with forest department and took permission.

The village people came to know about it, when the members of WPSS visited this area. Brother Chacko organised villagers and the Lakkidi youth club took lead in prevention of felling trees from axemen. Next day they went to collector and requested him to stop the felling as the forest in the area was on steep slopes and very crucial to the whole village. The collector ordered immediate stay and sent the Assistant Collector to the spot to inspect the place and submit a report. The collector gave stay orders based on the report. However, the estate owner was a key figure and he influenced the state government to remove the ban. At this stage the issue attracted wide attention and WPSS and other organisations came to the local villagers support. In June 1985, they marched a distance of 35 Kms from Lakkidi to Kalpet. They staged Satyagraha in front of Collector's office. The press covered the movement and gave wide support. The collector gave stay orders and the forest were saved. Ordinary people of villagers, except political leaders (who took bribe from estate owner) participated in this successful movement. Khader, an agricultural labourer was the local leader of this movement. It is this awareness among laymen, that was the main pillar of people's movement.

#### 5.5 Movement against quarrying

The recent struggle is against quarrying in Etakkal. The contractor cum politician got the quarry permit. However, WPSS and other groups fought tooth and nail to stop quarrying. They held Satyagraha and the movement continued for 4 months. The Etakkal caves, are a cultural heritage with stone age carvings. The historical and ecological factors were reinforced by news papers. The politicians tried to bring pressure on the bureaucrats to give permission to blast the caves. However, the people's pressure won the battle at the end and even the Chief Minister had to give into people's pressure.

#### 6.00 SOCIAL FORESTRY:

New way of destroying Natural forests:

All the pressure on natural forests since 150 years in Wynad has led to depletion of the existing area. With the increasing awareness and strong people's movement in the area, government has found a new way of destroying the remaining natural forests under

guise of 'Social Forestry'. In Mananthady taluka, the forest department started a scheme of developing medicinal plants in Kurva. The scheme takes toll of natural forests and swamps. This whole scheme is funded by social forestry. The fallacy of this scheme is, there is a failed teak plantation near this area which would have been taken for growing medicinal plants. However, the forest department opted for destruction of natural forests in 200 acres. Similarly, the social forestry has started with destruction of grass lands and planting of exotic like *Acacia auriculiformis*. There is no need to grow this exotic in heavy rainfall area. But social forestry projects are forcing this monoculture. Again, the social forestry scheme envisages a novel idea of assisting tribals in their development. Tribal development, as a part of social forestry is to clear the undergrowth in natural forests and help them to grow commercial crops like pepper and cardamom. The commercialisation of the area in 1940's took away the land from tribals and pushed them back into forests. The government destroyed the forests and created monoculture plantations, depriving whatever support was available to tribals. Again now under the guise of social forestry the remaining natural forests are under the process of being converted into monoculture commercial plantations, that will be taken over by rich, prosperous non-tribals. The tribal labour and capital will be used in the initial stages and then the actual possession taken over by large land owners. This is the process of depriving the tribals, making use of their labour to create assets for rich and eventually drive the tribals away from forests. Thus, the present trend of social forestry in Wynad, practiced by World Bank money is going to harm natural forests and the tribal population.

- 6.1 In addition to this social forestry scheme, the new working plan of forest department has put forth proposals that are identical to colonial forest policy. The main objectives and important points of this working plan for 1985-86 to 1994-95 is as follows: (Eighth working plan for Wynad Forest Division from 1985-86 to 1994-95 by V.K. Sinha (1986)).

## Part - II

### Basis of the Proposals:

The future management policy will be guided by the following factors :-

1. Forests are a natural resource capable of development and renewal, but if over harvested, it is likely to create serious ecological imbalance and its further renewal and development may be rendered very difficult. It requires no mention that forests in this tract is over harvested. Keeping in view of this aspect the management policy will be to maintain and improve all the forests in the Division.

With the increase in population the demand for various types of forests produce is on the increase. It is impossible to manage the forests fulfilling the policy indicated above and at the same time satisfy the needs of the population from the forests. The needs of the population can not be overlooked and therefore, either the required product should be grown in lands other than natural reserve forests or alternative products should be developed to substitute the traditionally used forest produce.

2. The forests of the Division are accessible as a net work of roads exist in the area. Even in the remotest area one can reach the opening new roads at reasonable cost.
3. The natural regeneration of valuable species is inadequate in deciduous and semi evergreen forests. The position is not different in ever green forests subject to harvest in the past.
4. Adequate labour and sufficient trained personnel are available to take up management of the forests.

### SECTION-II

#### Objects of Management:

1. The main object of the management will be preservation of the forest in the Division in a way that the character and the composition is not only maintained, but also subsequently improved.
2. The collection of mature and over mature trees under selection felling system from suitable evergreen and semi evergreen forests in the judicious way and to ensure the regeneration of more valuable species by systematic silvicultural operations.
3. To promote the growth of existing plantations by proper silvicultural treatments.

4. To meet the rising demands for small timber and firewood for local consumption and to meet the raw material requirements of the wood based industries to the extent possible.
5. To provide for measures for soil and moisture conservation.
6. To provide protection of wildlife in whole area with special reference to Wynad Game Sanctuary.
7. To provide for all facilities to hill tribe in order to improve their economy and living conditions.
8. Consistent with above objectives to realise maximum revenue.

#### SECTION- III

The following method of treatment are proposed :-

1. There will be no clearfelling of any forests. However, plantations reaching the rotation age will be replaced by suitable species.
2. Selection felling will be confined to suitable ever green and semi evergreen forest where the terrain permits such working and the mature and overmature trees are sufficiently represented in dominant crop.
3. The plantations will be intensely managed with a view to maximise the production per unit area.
4. The ~~protection~~ protection of forests which do not come under the above categories will be scrupulously preserved for the perpetual stability of the locality.

6.2 The forest department claims that these working plans are based on scientific principles. A look at the working plan of 1930 (3.1) and the plan of 1986 (6.1) shows the fallacy of these so called 'Scientific' nature of these documents. The analysis of 1986 plan reveals the inner contradictions inherent in the forest policy and working. The new plan agrees that over exploitation had damaged the ecological balance. But its practical solutions like basis for proposals and objects of management lay more emphasis on destruction of the remaining natural forests that serve the purpose of soil and moisture conservation. The main objective is to "realise maximum revenue" this commercial aspect is the basis of present scientific forestry policy, that is destroying the basis of tropical forests. The practical document does not take into consideration the factual history of last 150 years of commercialisation that has ruined the life style of tribals. As we compare both these plans, even after a lapse of 55

years, the forest department has least bothered to learn from its own destructive policies that are so evident in the form of drought and severe water shortage in Wynad. The 'Scientific forestry' in Wynad is a story of turning a sustainable forestry to non sustainable destructive policy, of converting renewable resource to a non renewable resource.

#### 7.00 Peoples knowledge

The invasion of commercial interests by Britishers and then by Indian people has destroyed the tribal base of indigenous knowledge about the forest and its use in a sustainable way. As pointed out by working plan (1930) The Jenu Kurubar are least civilised of Jungle tribe. They may be said to live on the forest eating honey, roots and fruits etc.," This is specifically what is known as non wood products of forests that provided the basic needs of tribal population. However, the commercialisation treated the TIMBER as the main product. Even now the soil in Wynad is fertile enough and the process of natural regeneration of indigenous species of ~~the~~ vegetation is feasible. So, people are demanding that there is no need for planting exotic monocultures in barren area. According to WPSS, it is contemplating to destroy eucalyptus and teak and allow indigenous species to grow. It is very obvious that the people are much more concerned about the regeneration of that kind of forests that builds up soil and water, the basic capital of human kind. However, the government and forest department still thinks that (6%) timber and revenue are the main outcome of forests. These clash in basic objectives is obvious and is expressed by peoples movement. The fact is whether the government wants to adhere to this sustainable policy of people, based on peoples knowledge and not on the consultancy from so called 'foresters' from World Bank or PAO.

#### 8.00 CONCLUSION:

The process of accelerated deforestation started showing signs as back as 1890. However, only in 1980 peoples movement came up spontaneously and it succeeded in bringing pressure on government to stop felling of trees in Wynad. This achievement of WPSS is something unique. It is not a NGO and is totally dependent on local leadership and decentralised working. It finances its activists from funds generated locally. It has also helped other forest movements by giving proper guidance based on its long experience. These are

some of the strong points. However, in recent times the govt. has found a dubious way of destroying remaining natural forests, in the name of social forestry. The high claims of 'afforestation' and 'tribal development' makes the matters more complicated. Many NGO's are supporting these social forestry programmes and are one with the government. They have taken up projects of afforestation, funded by state government. Thus, the voice against social forestry is weakened by those co-optation techniques. It is a pity that the new working plan for Wynad prepared by Forest dept. (1987) does not take into consideration these factors which are basic to revive forests in Wynad. The present trend in Kerala and Wynad seems to be towards weakening of peoples movement by using government aid. The clear distinction between NGO's and people's movement, and an emergence of strong people's movement can only show the genuine way towards ecological rehabilitation, one that is practical at this stage.

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(This report is based on extensive field work in Wynad from August 16 to August 22, 1987)

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## PEOPLE'S MOVEMENT IN BASTAR

### 1.00 Introduction

- 1.1 Bastar district in Madhya Pradesh is well known for its forests and tribal life. It is a wide area, covering 22268 sq. kms. The altitude ranges from 100 meters to 1000 meters above sea level. Due to this variability it has a variety of forests from bamboo forests to sal forests and teak forests grow side by side in natural environment. According to official records 57 percent of the geographical area is under forests. 'Bastar' literally means "land in the shadow of bamboo grove". Indravati is the main river flowing across Bastar.
- 1.2 The total population of Bastar is 18 lakh, out of which 12 lakh are tribals. Thus it is predominantly a tribal area, with numerous tribes in various different areas. Paddy cultivation is dominant in the plateau near Jagdalpur. In other areas paddy is cultivated in small patches along the fertile valley. People who were practicing shifting cultivation have stopped this, except in Abujamrah hills. The astonishing feature of the tribal villages is existence of a mango grove. The grown up mango trees is a visible sign of tribal settlement. This mango groves are common in the areas where the Raja of Bastar ruled during 19th century. The tribals say that the Raja Bhairam Dev asked people to plant mango trees. This mango trees provided ample fruits during the summer when the employment and food is difficult to find. People collected the seeds of mango fruit and stored them in Bamboo baskets. They would preserve them till they were sure of securing a good harvest. If the crops failed due to drought or other reasons, then the tribals would use these mango seeds as food. They would allow it to sprout and the inner cake will be used to make a gruel called "Page". This seeds acted as a security against droughts. If there is a good harvest, they would empty the stock of seeds around

the village to regenerate more mango trees. Thus, the tribals invented their own indigenous method of dealing with drought.

### 1.3 History

Though the historical records are meagre, there is an agreement on the point that the tribals are the only indigenous people, who are forced to occupy this area due to invasion by Aryans. It was under the regime of Kings from South India. Some of the relics of temples are found in Barsur, on the south of Indravati river. The Britishers took control of Bastar in 1854. They allowed the local king to rule and a Resident Commissioner was supervising the State. The King Bhairam Dev was very popular among the tribals. He played the role of maintaining the links between various tribal groups.

### 2.00 Forests

- 2.1 It is interesting to note that Britishers were manipulating the position of King and through him they purposed the unpopular laws. Raja Bhairam Dev accepted the following imposition by Britishers in 1870, while becoming the state of British. "I will follow Chief Commissioner's orders. Whatever the forest laws formulated or purposed by the Chief Commissioner will be observed by me and I shall see that the citizens of my Kingdom will follow them". So, it is obvious that the Britishers clearly visualised the need to exploit the virgin forests of Bastar. In 1899, Mr. A.W. Blunt, I.F.S. was deputed to tour forests of bastar and submit a report to Political Agent, Eastern States regarding their reservation. In the year 1910 the Britishers introduced the concept of reservation of forests. There was a touch resistance from tribals against reservation of forests. They thought it to be restriction of their freedom to use forest resources. In 1910 the resistance involved other issues of non-tribals and forest reservation. The King had to seek armed help from Britishers to crush the resistance. This indicates the feeling of resentment among tribals deprivation of their ancestral right over forests.

2.2 After dealing with the rebellion of tribals, the British administration concentrated on removal of valuable timber from the forests of Bastar. The rate of destruction was not so great, as felling of Sal and Teak trees were resorted for railway sleepers. The forestry operations of the period before independence is summed up by the following excerpt from the inspection note in 1946 by Chief Forest Advisor of Eastern State, Dr. H.F. Mooney as follows, "Bastar is not, as some might suppose, one of the States most advanced in technical forestry. Its importance lies in the vast area of its forests and in the large forest revenue, but of Scientific Forestry, there is almost none. Hitherto the department has been little more than a revenue collecting agency and the State has been living on its fat, in the sense that it has been living on its forest capital - a free gift of nature with which the State was remarkably well endowed. There has been virtually no effort to plough back into the forest by means of Improvement felling, thinnings or plantations any of the money taken from it." Practically speaking, this fact of not introducing Scientific Forestry, of plantations has saved the forests of Bastar! As we would see, the era of Scientific Forestry practiced by the independent government in post independent India resulted in total destruction of the forests in Bastar.

### 2.3 The Forest Policy of Independent India

The foresters envisaged a new working plan for the forests of Bastar. The Working Plan I for the North Bastar Division written in 1955 lays down the basic objectives of management of forests as follows:-

"The future management of the forests should be directed towards the implementation of the policy of Government as laid down in M.P. Forest Department Resolution No. 3952 dated 10-12-1952, the main object being "public well", which may be interpreted broadly as "the greatest good of the largest number for all the time". Acceptance of this principle involves the regulation of rights and restrictions of the privileges of user as individuals or communities in the wider interest of the State or Nation."

Thus the new policy impinged on the tribals rights on the forest resource. The forestry operations to clearfell sal forests to plant teak and other exotics were launched vigorously. It is at this phase the international agencies decided to step in and the World Bank came to Bastar with the idea of establishing pine plantations.

#### 2.4 Pine plantations

Experimental pine plantations in Bastar in Kanger Reserve Forests in 1972. Thereafter large area of natural forests with predominantly sal trees were clearfelled to plant tropical pine. An officer involved in the logging operations in 1970's said, "There was enormous activity in the forest. Heavy machines were imported which would fell the trees and would remove even the stumps and roots. We could see foreign experts everywhere directing logging operations. Broad metalled road was built in midst of forest to transport logs. The pine nursery was started which imported seeds from foreign country". The local tribals were working as labourers and they received exorbitant wages. The tribals had never seen or received such sums of money in their life. Some villagers resisted the felling of Sal trees near to agricultural land. But this resistance was ignored and clearfelling of more natural forests was carried on vigorously. The sole objective of introducing tropical pine plantation in Bastar was aimed at producing pulp for paper factory. The World Bank proposed to set up a pulp factory in Bastar to utilise this pine and there were proposals even to export the pulp.

#### 2.5 Effects of clearfelling Sal Forests:

Chandu from Kurandi village which is surrounded by Pine Plantations, said "In pine plantations there is no undergrowth. So we are not able to get tubers, vegetables and medicinal plants that was available in the Sal forests.

Eshwar from village Kumli said "We asked the government not to fell all the trees near village. Now we have to walk 10 kilometres to get datoon (toothbrush). We can not get the leaves of Sal trees from which we made plates for eating food".

Another opinion by a tribunal, "It has taken away the rainfall. The pine plantations do not create wind. The leaves are not there. So without wind there is no rain. The streams have dried up". What he was telling us is that the precipitation or the power to attract moisture laden clouds has decreased. Another opinion, "It does not have the seeds that we can use. The wood is also of no use to us. As weeding is done by forest department, it does not give us any tubers. This tree is very bad one. We do not know what is this tree and it is of no use for us".

Among tribals this pine tree is known as "Paisa Jhad" meaning the tree from which money will be manufactured. The only thing they knew was that a lot of money will be printed from the pine trees.

#### 2.6 Comparison between Sal forests and Pine Plantations:

In Bastar it is a very common sight to see a group of women coming from the forests in the evening with a bamboo basket on their head. The basket is full of various forest produce that sustain tribals. For tribals the natural forest is like a "free shopping complex" created by nature from where they pick up edible things.

Sal trees play a very important role in the lives of tribals. As Mitki Bai of Asna village says,

"From morning to evening we use Sal tree. In the morning we brush our teeth with datoon made from Sal tree. In the afternoon we eat our meals from the plates made out of Sal leaves. We use Sal seeds to get oil for cooking. We get fuelwood from the Sal jungle. Every evening we (women) go to get Sal sticks and leaves. We do not have plates to eat meal".

The tribal life is dependent on Sal forests. After using the Sal leaves as plates for eating, it is put into compost pit and becomes manure.

Mitki Bai says, "We get three varieties of Chata (mushrooms) from these Sal forests during rainy season. The 'Boda' Chata is the best one as it has very good taste. We get dhoop from Sal trees. We sell this dhoop and Sal seeds to earn some money".

Thus, every part of Sal forest is useful to the tribal people. Some tribals told that "they cut Sal trees and get drinking water during summer, when they are away in the forest". The Sal forest retains moisture. In total contrast to the utility of Sal forests the exotic pine is of no use to the tribal people. They say "this tree is of no use to us. We have not heard or seen a tree like this". The only value of Pine is to non-tribals to meet the demand of pulpwood. Yet some tribals have got fringe benefits from pine plantations as fire watchman. These pine plantations are extremely fire prone and every year government has to employ watchers to protect it.

## 2.7 Natural forests and tribal life:

Mitki Bai of Asna village said, "when there is no food in our house, we go to forest and get Kandmul (tubers) and eat it after boiling them in the night. We do not sleep with hungry stomach, the dense forests provide us livelihood and taking care of people like us. This forest is not planted by any one."

The food of tribals consist of rice and coarse millet like Kosra, Sikma, maida (Eleusine Corcoana) and Saura (Echinochhea Colona). This main diet is supplemented by vegetables, fruits, roots, tubers collected from forest. Every day women from every family go into the forest to collect these forest food. The tribals never die due to starvation, even during worst drought years due to their dependence on wild food and fruits. The edible roots are known as 'Kanda' (of Dioscorea species like targaria and pitha) boda chattari (mushrooms), chhindbaber, Oliari-bhaji (Bauhinia purpurca), giral flowers, surankand (Amarphillus).

Studies conducted among the tribals adjacent to Bastar reveal that the dependency on wild food is more among food gathering tribe. (For details see paper by Urmila Pingle). The study concludes "the investigations showed that the staple grains like millets and cereals contribute a major proportion of the energy, protein and thiamine to the diet of both the tribes in post harvest and pre-harvest seasons. Other cultivated foods like legumes, pulses and vegetables form an important source of nutrients especially minerals and vitamins in the post harvest

There is, however, a marked seasonal variation, the wild food contributing a major proportion of the protective nutrients like minerals and vitamins in both the tribes in pre-harvest season. The season trend is more marked in Maria Gonds because of their greater dependency on wild foods during this season. In conclusion, wild foods constitute a more important source of protective nutrients to the dietary of Maria Gonds than Koyas".

In addition to food, the forest provides the tribals collect Sidai fibre to make ropes and grass and Chhind leaves are collected for thatching. They use bamboo to make baskets and mats. One of the forest officials remarked, "There are more trees in the revenue lands than forest area. The tribals are more interested in trees than in cultivating paddy". This is the fact, as one can see that Mahua trees are found in abundance in the paddy fields and revenue land belonging to tribal community. For tribals these trees are more important than settled agriculture.

- 2.8 The government and international agencies did not bother to look into the relationship between natural forests and tribal life. Pine plantations continued to dominate the forestry programme in Bastar till 1982. The tribals submitted memorandums, which did not work. In 1978 Mr. M.A. Waheed Khan, C.C.F., Madhya Pradesh submitted a report on Pine Plantations (PINPOINTING PINE). He concludes, "Clearfelling of high quality Sal, teak and mixed forests, as occurring in Bastar, to raise plantations of tropical pine, purely to provide pulpwood for the manufacture of pulp and paper is neither scientifically desirable nor industrially necessary". It is said that this report was suppressed and it never reached the State government. The planting of tropical pine was stopped after 1982, due to a mounting public criticism. So far an area of 1200 hectares of Pine Plantation stands as a proof of destruction among tribal villages in Bastar.

2.9 Intensive Forest Management Plan

The damage done by Pine plantations is negligible compared to the damage done by the government's plan of intensive forest management plan (IFMP). This IFMP was initiated in 1970's to

boast the development of Bastar. Accordingly, the forest yielded 31,40,000 C<sup>3</sup> of Industrial wood and 3,20,000 tons of bamboo every year. The forest department envisaged to increase this by 14 times, through the IFMP. The intension was to set up, a paper factory, four plywood factories, a particle board unit and saw mills. The objectives were as follows :

1. Industries will get maximum raw material at low cost
2. These industries will get wood / raw materials at their factory site by a series of rope ways.
3. Forest departments earning will be Rs. 24 crores per year and indirectly earnings to State will be Rs. 60 crores.
4. Employment for 1 lakh people
5. Earning of foreign exchange through export of pulp and timber.

To achieve this objectives the plan formulated to clearfell natural forests at the rate of 10,000 hectas every year!!! These natural forests were to be replaced by teak, tropical pine, bamboo and fast growing softwood species.

The plan thought that tribals will get employment by "cutting trees". According to Shri. Kailash Narayan Mishra, Chief Conservator of Forests, "We want to develop Bastar on the models of Lapland area in Sweden. In Lapland area the situation of tribals was similar to the situation of tribals in Bastar. They developed due to forest based industries. Similarly we will create Lapland in Bastar."

The obsession of imitating the Swedish model took toll of large tracts of natural forests on which the tribals survived. The Pine plantations was part of this plan. This plan was stopped after 1983-84 as the policy makers realised that they are creating a desert in Bastar. Fortunately enough, due to the tropical nature of the area, there is enough, due to the tropical nature of the area, there is excellent regeneration of indigenous species in those denuded areas.

### 3.00 Destruction in the name of development

#### 3.1 Dandakarnya Project

This was the first of the resettlement schemes formulated to rehabilitate the refugees from East Pakistan. The government initiated this resettlement programme in Koraput district in Orissa and in Bastar district. Accordingly large areas of natural forests were clearfelled to create agricultural land. New settlements of refugees came up in the deforested areas. Machineries were brought in to cultivate the freshly acquired forest land. Today, vast stretches of this deforested land lies barren. The refugees have left the area as they could not adjust to the local conditions. The Dandakaranya Project was a disaster for refugees as well as for local people. The most dangerous effect of this project was on natural forests. A lot of money was spent on this project.

#### 3.2 Beladila Mining Project

This project started working from 1971-72. The iron is exported to Japan. A railway line has been constructed from Waltair to Beladila for transportation of this ore to the port. This project is posing a serious threat to the ecology of the area as streams are drying up due to open cast mining. The slurry plant releases a lot of silt into one of the tributaries of Indravathy river. The disastrous impact is increase in the number of non-tribals and increased pressure on available forest resource. Many tribals, especially Bison Horn Maria tribal group has migrated to Abajamarh hills from Beladila due to coming of the project. Migration to an area like Abujamarh, where the tribals are practicing shifting cultivation has disrupted the sensitive ecology of the area, leading to tensions among tribal groups.

#### 3.3 Bodhghat hydro electric dam

Madhya Pradesh government is trying to build a hydro electric dam across Indravati river in Bodhghat, Bastar. It is the first of the dams across Indravati, and there are plans to build similar dams at Inchampalli and Bhoopalpatnam across

Indravati. The foundation stone for Bodhghat dam was laid by then Prime Minister Morarji Desai in 1979. This dam, when completed at a cost of 600 crore rupees will generate 500 Megawatt electricity to be fed into central grid. The government claims that it has already spent Rs. 35 crores. They have built residential colonies and road, but no major work on dam construction has even started till September 1987.

The proposed dam will submerge 13000 hectares of land, of which 5000 hectares are prime sal and mixed tropical deciduous forests. Remaining 8000 hectares has a dense tree cover, especially trees like Mahua, teak and those trees useful to tribal life. The project, when completed will displace 30000 tribal people residing in 42 villages in this valley. Tribals are totally dependent on forests and only some of them depend for a short time in the year on paddy cultivation, that is limited to valleys. Rehabilitation of these tribals in other areas would be almost impossible as they are not willing to leave their ancestral place, the place where the burial ground of forefathers are situated, which is more sacred to them.

The State electricity Board has already started compensatory plantations in other areas of Bastar. This has already met with opposition from villagers. The compensatory plantations of exotic species like acacia cannot match the natural sal and teak forests that are going to be submerged in the hydel dam.

It is amazing to learn that World Bank has agreed to finance a part of the cost of construction, to the extent of Rs. 360 crores. The agreement was signed in 1985. Incidentally, a part of the area to be submerged was to have destroyed by its earlier plan of pine plantations that was halted and now the World Bank is back in the same area, helping the State Government to uproot the tribals.

There is not much opposition from the affected people because even now they are unaware as to what will happen to them. The only opposition is by some concerned journalists and individuals in Jagdalpur and by some environmentalists. The forest department is also with environmentalists! It does not want to lose its land!

Although there is a still opposition from environmentalists and the department of environment at centre, it seems that the politicians are going to pressurise for the final permission of go ahead. Their interest is very clear, even if World Bank stops funding the project, the State government is going to finance it. But from where? It is through the felling of forests in the submersion area. It is a crude estimate that the value of timber available in 13000 hectares will be around 5000 crores. So, the politician, contractor and petty businessman is keeping an eye on this timber, which is of real interest for them. It is not the 'power' that State is interested, it is interested in 'timber' and 'money'. The vultures are waiting for the green signal of centre to permit the felling of forest.

#### 4.00 Peoples Movement

##### 4.1 Dolomite mining project at Machkot

Bastar forest wealth attracted the commercial interest from outside. Now the underground resource of various types of minerals is attracting attention. The Machkot area was an excellent mixed forests with natural sal and teak species. Initially some area was clearfelled and pine plantations were established. The areas saved from pine plantation was the target of National Mineral Development Corporation Ltd. (NMDC). It formulated a plan for development of Bastar with Machkot Dolomite Project. Accordingly an area of 220 hectares of natural forest area will be taken by NMDC. It was to extract 6,95,000 tonnes of dolomite every year.

The project document states, "An amount of 20 crore rupees will be spent in three years in this area and thus shall mean

prosperity of the area in general". The project would generate employment for 700 people permanently and 800 people on temporary basis. This project was to bring industrial development in the backward area of Bastar, with an increased opportunity for employment.

- 4.2 The people of the area near this dolomite reserves had the experience of pine plantations. So they were not willing to give an opportunity to this project "to develop" the area. They started organising themselves against this project, even before it started any work. People from Semra, Markel, Khumli, Khumari, Bhamni and various villages joined together. They said, "We want forest, not the mine. These forest meet all our needs, from water to shelter, to food. It supports us from birth to death. What will the mines provide? Some stones? Can we eat these dolomite stones?" There was a wider support from other areas beyond Machkot because it was 'Nistar' forests. It means the forest from where 40-50 villagers had the right to take fuelwood and other benefits. In fact villagers come with carts to take dead trees from Machkot forests. Its destruction would have affected all these people. With this direct effect of fear of losing the forest united tribal groups to fight dolomite project.

A visit to Machkot forests revealed the richness of the numerous variety of species. The tribals accompanying us went into this forest and dug out 3 different kinds of tubers that are edible and brought two medicinal plants. They took just five minutes to bring these precious things. We also saw huge sal trees. The project report of NMDC denies the existence of this rich forests. It says, "Over an area of 140 hectares required for the mine, sal is scarce, but the vegetation comprises of miscellaneous species characteristic of northern tropical moist deciduous forest". This report was given by Prof. Y.M.C. Sharma, IFS (Retd) of M/s International forestry Consultants. This man has twisted the reality in favour of mine project. He has similarly given favourable report to Kudremukh iron ore project in Karnataka, which has destroyed the local ecology.

4.3 In view of the stiff opposition by local people the forest minister of the State visited this Machkot area in 1985. The tribals greeted him with basketful of forest products - from wild food to fruits and herbs. They asked him, "Can your mine give us all these items?" The forest minister had no reply. In Khumli forest, about 2000 people gathered and one of the tribals told the minister, "Your government is great. It can do many things that we can not do. You can start this mine. But you should do that without disturbing a single tree. If your government can do this then we do not have any objection. We want our trees intact, we should get all these tubers and fruits." The forest minister had no answer to these questions. The State government decided not to take up this project and it was abandoned. The people's movement succeeded in saving the little patch of natural forests. This movement enhanced the confidence of tribals. This was the first spontaneous movement in Bastar after 1910, the time when tribals opposed reservation of forests.

4.4 Tribal Women launch Movement:

Asna village in Jagdalpur taluk became the centre of the movement launched by adivasi women. In January 1987 the forest department started digging trenches and fencing the area near the village. In fact on all the sides of village the forest department wanted to fence the barbed wire. In addition to fencing, they started clearing the existing trees in the forests surrounding the village and digging pits for plantation programme.

These areas near the village are NISTAR FORESTS, left for the use of villagers. The women who go to forest everyday observed these developments. They felt very uneasy about it. In bewilderment they came to village and told their men that the forests are being destroyed by forest department, and something should be done to stop this encroachment. The men felt that they can not do anything as the government is doing this, and that opposing government is not possible.

The situation became explosive in the due course. As Mitki Bai said, "We were shocked to find that they destroyed little shrubs that helped us to use as toilet. They closed the bridle path we used from childhood. Our cattle were injured as the barbed wire peeled the skin of cattle. How can we tolerate all this?" They approached village headmen and Sarpanch. They simply discouraged them and said, "Why are you getting into this muddle? You even do not know that government is doing this. It is not good to oppose." As they realised that none in the village is going to help them, almost 200 women gathered at a time and moved all around the village compelling the forest department to stop the work. They succeeded in this task. It became almost a daily routine of women in Asna to go in groups to stop the work of plantations. They tried to explain to workers that, "If these forests are destroyed our life will be full of difficulty. It will bring a disaster for us."

Usefulness of Nistari forests - The shrubs and grazing land near villages known as 'Nistari Jungle' plays a very important role in the life of tribal family. The women, girls go to this forests to graze cattle, to fetch leaves, fuelwood and tooth sticks. The women get these things near the village. The forest with large, huge trees or dense tree does not help them to get these items. These items should be easily available from small trees so that they do not have to climb big trees to pluck leaves. The villages in Bastar are clean because people do not defecate on the road, or near village. They go into these Nistari jungle and shrubs acts as a cover. However for forest department these forests are 'degraded forests', it does not have commercial value. To create a forest or to raise plantations of commercial species the department started clearing the shrubs and existing tree growth. This act was to disregard the needs of tribal people and especially the women who utilised it. The conflict of commercial interest of forest department and the utilitarian interest of tribal women was the starting point of women's struggle.

#### 4.5 Struggle for Survival

The tribal women, who were afraid to talk to outsiders and who never ventured to oppose publicly launched this struggle. One can imagine the difficulty of these women. They had to sacrifice work and earnings as the struggle required their regular presence. As the forest plantation work came to standstill, the forest officials, including DFO came to Asna. The women numbering around 200 gathered instantly and gheraoed DFO. Women were not ready to accept the teachings and reasoning of forest officials. The officials threatened to take legal action and bring lady police. To this women replied, "We will face the jail, we are ready to sacrifice our lives to save forests. Even if the forest is not there then we are as good as dead. So it is better to go to jail. But we will not allow an inch of our forests. We will not allow you to cut the trees". This kind of firm determination saved them and their forests. The work was stopped temporarily. Surprisingly, the men from tribal families or from non tribal groups did not participate in this movement. They were silent spectators. It is only Iqbal Bhai a sympathiser helped the women during struggle. The non-tribal women, who do not go to forest to fetch fuelwood or leaves did not participate in the movement. The late night meetings of the struggle was attended by tribal women, those who were directly affected by forest departments work.

#### 4.6 The memorandum of tribal women:

Those women who launched the struggle got support from other women in surrounding villages. About 2000 women took a procession to District Collector's Office and submitted a memorandum. The contents of memorandum in short is as follows:

"We, the women of Asna, and nearby villages have come here to request you to stop the destruction of forests near our village. These forests are here since ancient time. These give us tubers, water, fuelwood, toothsticks(Datoon), vegetables, fruit, Bamboo etc., These things are available for past several years. Even during Rajas Regime, we were never prohibited to get these things from forest.

Do you know the hardship faced by Adivasis in daily life? When we do not have anything to eat, we go into the forest and get tubers. This forest is like our guardian, taking care of all our needs. No one has planted these forests, they are creation of God.

Now the forest department is felling these forests. Near the village it has cleared all the bushes, small trees. Now we do not have any place to go for toilet. By clearing the forests they have forced us to lose our honour. We have lost our honour.

The government has closed all the paths leading to forests. Trenches have been dug, barbed wire fencing is erected. This has created problem for our movement. Where will we get our Nistar? Where will our cattle graze? You have set up plantations in our cremation ground.

You are felling the existing trees and are planning to bring up plantations of those trees that are unknown to us. What is the use of this unknown trees?

We, adivasis use 'Dona' (plates made out of leaves) for eating our meals. We do not have plates made out of copper. If you destroy our Nistari forests, from where shall we get our 'Dona'? From today, we will not allow you to fell any trees in the jungle. We will keep our watchwomen in every village.

Our demands are :

- Remove all the barbed wire fencing around village. Our cattle shall graze there.
- In absolutely barren land if planting needs to be done, then preference will be given to Sal, Mahuwa, Char etc. We do not want other trees near our village.
- Stop the people who are tilling new land inside forest area.
- Stop felling of green trees, lopping green trees, removal of bark, removal of roots.

If you do not accept our demand, we will not allow you to work or to fell trees. We will embrace the trees. First you cut us and then the tree.

We have been put into great trouble and difficulties. So we have come with this memorandum".

### People's Movement and communication

A common feature of all the people's movement is the idea of struggle conveyed from village to village through folk songs and drama, not at all through written words. Most of the people involved in the struggle are illiterate villagers. They are least bothered about what is reported in the press or other mass media.

The folk songs are common in tribal areas, which incorporate the idea of the movement, the core idea of forest protection. For example, the tribals in Gandhamardhan treat the forest as 'Mother Earth' that provides all their needs. The mining project is a demon for them.

In appiko, a folk dance drama on nature has been developed on Yakshagana style. In this drama, the Nisargaraja's wife Pragati is replaced by Vikruti. Nisargaraja does not know about this trick. He listens to the advice of Vikruti and destruction of nature is resorted. This has the disastrous effect, leading to drought and floods. At this stage Nisargaraja comes to know about the reality, that it is Vikruti's advice that brought the miseries. He finds Pragati and formulates a new policy of harmony between man and nature.

This dancedrama brings out the contemporary issue of development and destruction of natural resources. It has already gained popularity in Karnataka and is spreading to neighbouring States. Similarly many of these movements have developed street plays and drama to convey the message. In rural areas the message is conveyed through relatives and friends.

The voluntary agencies, the department of environment and host of other people working to raise awareness among people do not realise that these movements are not the product of such campaigns. They have emerged spontaneously and they are sustaining on their own.

### People's Movement and finance

All these movements are self supported by ordinary people. In Chipko, Appiko and the struggle of Gandhamardhan - the concept of construction of "fistfull" of grain from each household played an important role. Activists collected this grain and pooled it together. It was either used to run community kitchens or it was auctioned to get some money for movement.

Many people who are sympathetic to the cause of movement have contributed in kind, some have given time.

In the adivasi women's movement in Bastar they got funds through a unique indigenous method. The women leaders or the ones who speak is given some money in appreciation. The person attaches the money (notes) to the cloth of spokesman/spokeswoman. In local language it is known as "MENTAL MARNA". They raised a reasonable amount of money through this method. The most important factor is, the movement is not run by any paid worker. It is done purely by voluntary workers without expecting anything in return. The volunteers are motivated and they are taken care by the villagers, sympathisers.

District Collector of Bastar visited Asna village to inspect the difficulties of these women. Women took the Collector around the village and explained the difficulties. The Collector agreed to the demands of these women. This success triggered off a series of similar movements to protect forests in adjacent villages. The villages are Erikpal, Dhobiguda, Metawada, Kudalgaon, Borpadar, Junavani and other 15 villages. The women from these villages heard about the successful struggle of women in Asna and they came in groups to learn more about launching the movement. Mitki Bai, the leader of this movement became a popular spokesman of this struggle. She, accompanied with other women walked to other villages, of a distance of 60 kilometers to spread the movement. Thus, the tribal women have achieved success in protecting their forests.

### 5.00 Conclusion:

The so called 'Scientific forestry' has destroyed a lot of natural forest area in Bastar. The spate of development projects have

taken toll of another chunk of forests. Now the forests department wants to restrict the tribal people and started curtailing their rights over forests. The adivasi women's struggle is the first of this kind of movement in Bastar. It is spontaneous, firmly rooted in the local leadership. It is spreading fast to other areas in Bastar. The tribals of Bastar know more about forest as a source of survival. It is due to this reason they develop a system of managing their forest resource. Every village would convene a meeting each year and would decide the needs of individual families. According to this decision they utilised the forest resources. This was their "Working Plan". Functioning of this working Plan, helped to retain the forest wealth for centuries. But the modern working plans based on forestry science have depleted the forests of Bastar. The people's movement is a step towards sustainable forestry in Bastar.

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(UN PUBLISHED)

- By Pandurang Hegde

The government sponsored intensive agricultural practices have also contributed in accentuating drought in western Rajasthan. The introduction of tractors in cultivation by replacing bullocks has destroyed fodder resources. As Ishwari Das showed a plot ploughed by a tractor, he said "the close ploughing by iron plough does not leave any space for growth of grass. Also the tractor plough deep, removing the grass roots. So in fields ploughed by the tractors grass does not grow". In fact this grass is a major source of fodder in rural areas. This year, even with severe drought conditions and scanty rainfall Ishwari Das has got enough stock of fodder. He said "I have thirty bighas of land. I use bullocks for ploughing my field. The crop has failed due to failure of rainfall. But I have enough grass from this field that is sufficient for whole year and some extra stock to sell". In an area like west Rajasthan where animal husbandry is so important, growing fodder grass is more important than growing food crops.

Traditional village architecture in western Rajasthan has inbuilt water harvesting techniques. These techniques utilised every drop of rain water, storing and conserving them to be used for whole year. In many houses and temples they are known as "Oran", wherein the micro catchment is kept clean and the slope drains out water into an underground storage tank. Similarly, the water from the terrace is also channeled to underground storage tank. These efficient methods of storage of rain water were used for cattle and washing. However, in recent years these excellent water harvesting systems have been neglected and they have become defunct.

The above factors show clearly that the recent drought is man made, and the destruction of resource base has accelerated intensity of drought. The sevan grass as fodder, khejaldi trees, indigenous agricultural practices and water harvesting systems provided a

decentralised system to fight drought. The people in West Rajasthan coped with drought with self confidence and through those means that were under their control. But in recent years the development schemes initiated by government have been a major cause for destroying the resource base. Now they look for government aid to reach villages. A point of contrast is that today they wait for fodder trucks to arrive from Punjab.

The long term solution lies in learning from traditional drought resistance techniques. But the government seems to ignore this and is behind giant projects like Indira Gandhi Canal. This canal is supposed to bring prosperity to Western Rajasthan. However, the local pastoral based people are least interested in taking to irrigated farming. As is the experiences of Ganganagar district, the irrigated area will be dominated by rich farmers driving away pastoral families.

The permanent solution to drought in western Rajasthan lies in the security of pastoral tribes, in secure supply of fodder and grass. Mohammad Ali and his kinsman from Kalan village are very skilled people who have maintained 'Rathi' breeds for centuries. They also have saved the purity of this breed. But now the drought and famine seem to be determined to take away their 'Capital'. If only the government's effort had been a help rather than a hindrance to the people's own centuries old wisdom of protection from drought then such large scale distress could have been certainly avoided. (Concluded)

( N.F.S. INDIA )

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( Western Rajasthan is today one of the worst drought affected )  
( areas in the country. Shocking reports of hunger, thirst, )  
( large scale cattle-deaths have been received here. In this )  
( 2- part article the writer explains how the villages here )  
( have been gradually deprived of the traditional methods of )  
( protection against drought )  
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WESTERN RAJASTHAN - DROUGHT-HOW THE  
PROTECTION IS BEING ERODED - I

By - Pandurang Hegde

Nalgaon is a small way side village in the midst of Thar desert. It is about 9 kilometres from Bikaner. Near the village we see groups of people camping in bushes, with their camel cart.

Mohammad Ali said "The entire family has moved from my village with twenty cattle. We have walked four days to reach this place. We want to take these cattle to cattle camp. But in Bikaner, the people say that there is no space for additional cattle. So we have camped in open since last five days". Their only shelter was the camel cart and open sky. They fetched water from about a kilometre.

Mohammad's old mother said in despair "we cannot see the cattle dying in-front of our eyes".

There were about twenty families camping in open at the site. They had come from different villages of western Rajasthan. Their situation is going to worsen during winter months. The nature will be harsh with cold winds. Human beings and cattle living in open, with very little food and fodder face a threat to their lives. As Nafeesa, a middle aged woman said "we give one meal to children in the evening and then ask them to sleep". Though in such extreme difficulty themselves, saving cattle is still precious to them.

Western Rajasthan comprises mainly the districts of Bikaner, Jodhpur, Jaisalmer, Barmer and Churu. This part of Rajasthan is different from other parts of the state. The life is tough in rugged Thar desert. The toughness of desert however, is compensated by a rich

cattle wealth. Rearing cattle and sheep is the basis of the economy in western Rajasthan. Camel and sheep provide income to poorest sections in the society. The nature has gifted the bounty through "seven grass". This grass grows in desert conditions, even with an annual rainfall of one to two inches per year. This is very good fodder rich in protein and carbohydrates. This fodder species grows wild in western Rajasthan, supporting the animal husbandry activities. Khejadi trees and seven grass are two basic support systems the nature has evolved to combat desert and drought conditions in this area. The best cattle breeds like Thaparkar and Rathi from this area, are well known for high milk yields all over the country.

Failure of rainfall and recurring drought is a common phenomenon in western Rajasthan. However, every village had a large area of common grazing land known as 'gochar' that sustained cattle wealth. The villagers were capable of dealing with drought as there was adequate security of fodder available from grazing lands. In recent years these grass lands have been destroyed systematically. Broadly, we can categorise three main reasons for the destruction. The zeal for distribution of land has led to privatising these grasslands. Secondly, influential people have encroached upon these lands. And finally, the state forest department, under the auspices of government took over grazing lands for planting monoculture.

In addition to destruction of grazing lands the disappearance of 'Khejadi' trees has increased the sufferings during recent drought years. Once established, these trees stay lush green even during severe drought years. As Narayan Mali, a sixty year old farmer of Bheenasar village said "During severe drought years people survived on made out of Khejadi leaves". This tree supported cattle and human beings by providing food from the leaves. Narayan Mali revealed another interesting fact about this tree. He said "If these trees do not flower and beans do not appear during the month of 'Chaitra and Vaishak' (April and May) then it indicates the coming of drought in coming season. People in western Rajasthan get themselves prepared to face the drought. "People in this

desert followed the nature's indicators and equipped themselves to fight drought years.

However, since last few years this 'Khejaldi' tree known as 'Kalpavraksh' of desert has been cut down to a great extent. They groves of this trees controlled sand dunes. As they were cut down, due to increase in population and cattle pressure, the sand dunes have encroached the grazing area and fertile agricultural land.

( N.F.S. INDIA )