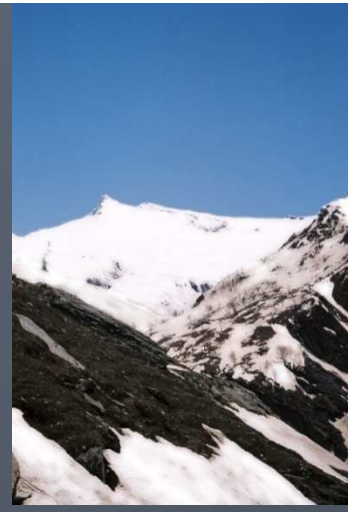
ERODING LIVELIHOODS AND LOST OPPORTUNITIES
- A CASE STUDY OF INDIA –MULTIPLE CRISIS

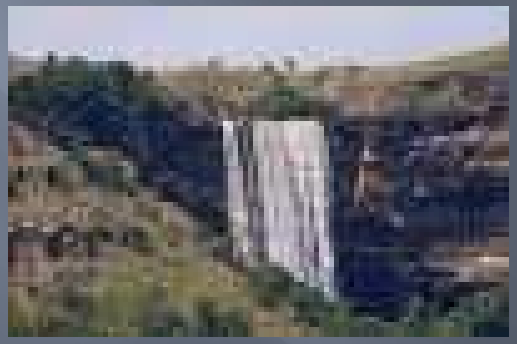
Dr. Vanaja Ramprasad
GREEN Foundation, Bangalore, Karnataka, INDIA.

ECOSYSTEM DIVERSITY IN INDIA

Biogeorgraphic zones

- TransHimalaya
- Himalaya
- Desert
- Semi-Arid
- Western Ghats
- Deccan Peninsula
- Gangetic Plain
- Coasts
- North-East
- Islands



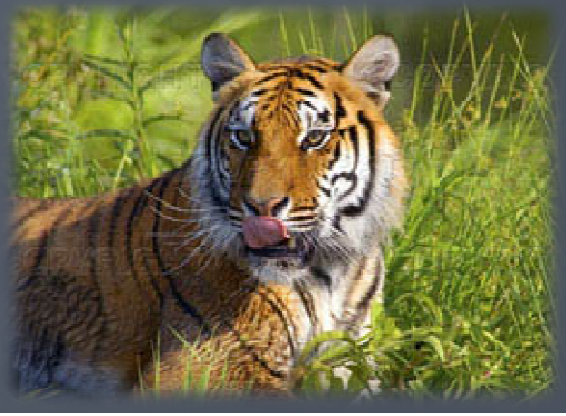


INDIA'S BIODIVERSITY VERSUS WORLD BIODIVERSITY

(ONE OF THE 12 MEGA DIVERSITY COUNTRIES IN THE WORLD)

8.1% of World 's bio diversity on 2.4% of World's area

- PLANTS: 45K-47K species (11% of known world flora)
- ANIMALS: approximately 90 K species (little over 7% of world's reported animal diversity)
- FISH: 2546 finfish species (11.7% of World's fish species)
- BIRDS:1224 species (12.6% of world's birds)
- REPTILES: 408 species (6.2% of world's species)



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DOMESTICATED DIVERSITY

(320 SPECIES OF WILD RELATIVES OF CULTIVATED CROPS BELIEVED TO HAVE ORIGINATED IN INDIA)

Domesticated Crop diversity

Atleast 166 species of crops (6.7% of total crop species in the world)

- Rice: 50,000 varieties
- Mango: 1000 varieties
- Sorghum: 500 varieties
- Pepper: 500 varieties

Domesticated livestock diversity

Widest range of animal breeds within each species.

- 20 breeds of goat
- 42 breeds of sheep
- 15 breeds of buffalo
- 30 breeds of cattle

18 breeds of poultry

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CAUSES FOR LOSS OF BIODIVERSITY

PROXIMATE CAUSES: Can be pinpointed as the direct and immediate ones causing loss

- Habitat destruction and degradation
- Hunting
- Exploitation
- Collection and fishing
- Introduction of Exotic species
- Accidental mortality
- Human induced disasters
- Climate Change

ROOT CAUSES: Indirect and often hidden and which give rise to the proximate causes.

- Model of Development
- Erosion of Customary rights and traditional management including social, political, and economic inequities.
- Changes in cultural ethical and moral values.
- Lack of recognition of the full value of biodiversity.
- Inappropriate, inflexible, weak and contradictory laws and policies.
- Demographic changes
- Inappropriate trade systems

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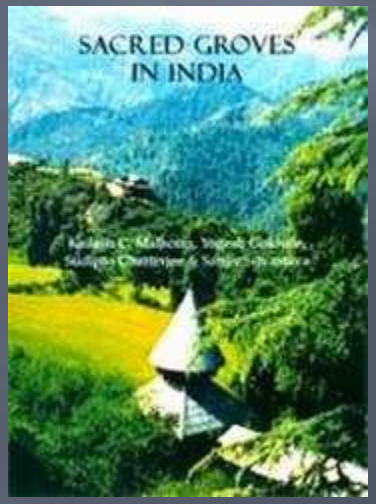
CONSERVATION INITIATIVES

•National- National Biodiversity Strategy and Action Plan (NBSAP), Project Tiger, Designated Biosphere Reserves and National Parks

•State – Protected areas in the states

•Local – Biodiversity registers, sacred groves



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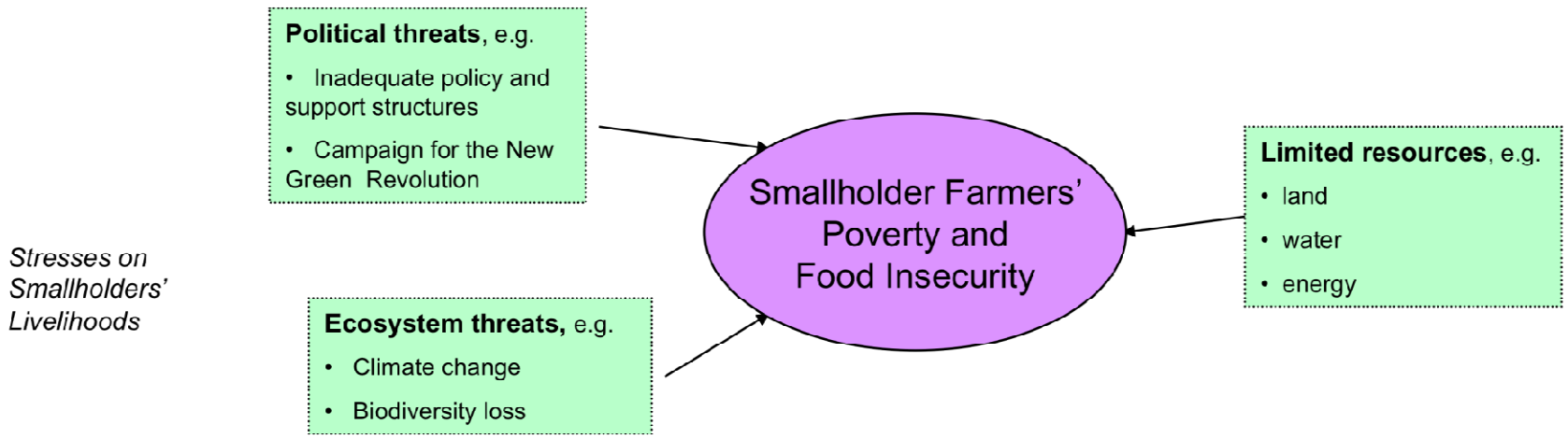
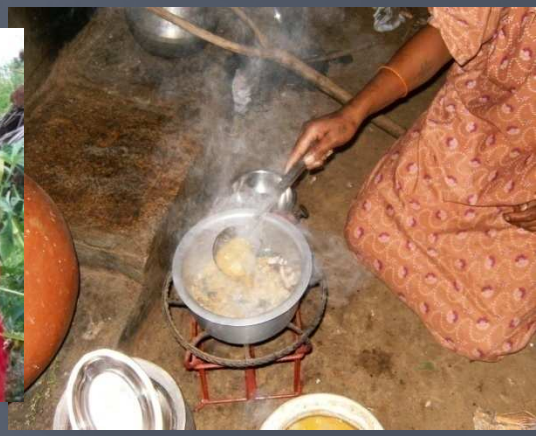


Indian agriculture faces an unprecedented crisis in sustainability. Food grain productivity is on the decline. The green revolution areas are encountering serious bottlenecks to growth and productivity. The dry-land areas (comprising nearly 70 per cent of the cultivable lands) continue to drown in misery and apathy. Excessive mining of soil nutrients and ground water have already brought in soil sickness. Indiscriminate use of chemical pesticides has done serious harm to the environment, human health and ecology.

Genetic Diversity and Food Security

- To meet house hold food needs
- To maintain culinary traditions
- To revive traditional knowledge systems
- To keep up the supply of seeds
- To select seeds according to desirable characteristics
- To maintain home gardens



Some Examples of Engagement with Women in Conserving the Plant Genetic Resources

- Women were identified as indigenous knowledge holders:
  - --- In seed storage methodologies and
  - --- Seed treatment for better yields

Some lessons learnt from the experience of working in the community

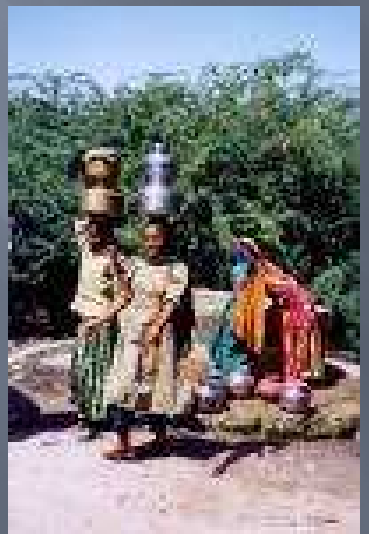
- There has been gender bias in mainstream extension
- The concept of community seed banks managed by women should be encouraged
- Building capacity of women farmers in management of PGR

Development process in India and its consequences

- Women have become victims of ecological degradation
- Erosion of livelihoods dependent on subsistence farming
- Loss of forest cover that has impacted access to natural resources
- Migration of men and brunt of it borne by women with increasing workload
- Invasion by the so called scientific knowledge
- Inconsistent government legislations and market forces
- Destabilising the lives of millions
- Lack of access and employment opportunities

Feminization of poverty

- Women headed households are on the increase
- Women bear the brunt of the production and reproduction
- Women have the burden of ensuring fodder/fuel and water for their households
- Women take the responsibility to care for the livestock which is considered as domestic responsibility
- Women gather food during the lean period
- According to the UN report no of rural women living in poverty have increased by about 50% over the last twenty years 560 million in poverty are women of which 374 million live in Asia

Policy recommendations

- a) Investments in rainwater harvesting need to be immediately shifted to the revival of the traditional forms of water conservation – ponds and tanks.
- b) Fodder cultivation, crop planning according to water needs and availability and an emphasis on local breed of cattle (and improving its productivity, rather than importing exotic breeds) need to be encouraged.
- c) Dry-land crops like coarse cereal, pulses and oilseeds require adequate policy measures that bring shine to these forgotten grains. Imports under bilateral trade agreements must protect the dry-land crops.

Policy recommendations

- d) Farmers in the rain-fed areas need to be insured against drought. This can be ensured by making it mandatory for the foreign insurance companies to invest at least 40 per cent of their funds for farm insurance.
- e) Hybrid crops require almost double the amount of water than high yielding crops. Unfortunately, much of what is cultivated in the dry-land regions of India are hybrid varieties – in cotton, rice, maize, coarse cereals and vegetables. All these crops are water guzzling and have compounded the crisis in sustainability. Hybrid crops need to be banned in the rain-fed areas.
- f) The experience with tractors for small and marginal farmers in North India has not been very encouraging. Once a symbol of progressive farming, tractors in Punjab for instance, have now become synonymous with farmer suicides. There are 70 per cent more tractors in Punjab than what is required.

Policy recommendations

- g) Seed village banks need to be linked to sustainable farming systems. India has a huge plant genetic wealth that is location specific and therefore meets local requirements. Seeds villages should encourage the sale and promotion of traditional varieties.
- h) Pulses and coarse cereals are a part of the average diet. Yet, pulse production has remained static. Pulses are also a crop of the marginal lands, requiring less water and replenishing soil nutrients. There is a need for re-launching the technology mission on pulses and providing farmers with small processing units to turn it into '*daal*'. Similarly, coarse cereals must also receive impetus. Both these crops need adequate price support.

- Poverty and climate change are the most important threats for sustainability.
- Does increase in GDP reflect the real well-being of a country?
- Can small farmers be protected from the onslaught of globalization?
- Can we accept the fact that small farmers feed the world?
- While we are asking small farmers to adapt to climate change, can we also look at standards of living to mitigate climate change?

THANK YOU

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