

Conservation and Revival of Local Crop Cultivars and Livestock Biodiversity Resources - Climate Resilient Initiatives

India as a Biodiversity Hotspot:

India is known as a mega diversity nation due to its rich biodiversity resources, diverse agro-climatic/ecological conditions and diverse seasonal patterns. Biodiversity is understood to be genetic variation, ecosystem variation or species variation within an area which provides food, fuel, shelter, medicines and other resources to humankind. Since generations, such diversity has been contributing to food security, well-being, survival and sustainable livelihood of communities. Such diverse agro biodiversity still exists in tribal areas, where tribal communities especially women are the main custodians of the rich traditional knowledge associated with many of these native resources.

Climate change and biodiversity:

With climate change, it is noted that an ecosystem based approach to adaptation is necessary. This also requires conservation of the regional biodiversity, ecosystem services and ecological functions. Biodiversity can help in building resilience against climate change effects for vulnerable farming communities. This regional biodiversity is an important source of livelihood and food security. Small farmers are benefitted from hardy crops. Diverse zones represent a unique habitat, having their own physical and climatic conditions, which allow growth of region-specific plants and crops which have adapted to these conditions for many years.

There are a number of landraces of

food crops that are resistant to pests, can grow on poor soils and can sustain under changed climatic conditions, while retaining high nutritive values. BAIF has adopted participatory conservation and revival of crop and livestock biodiversity resources in diverse agro-climatic zones. The focussed resources are crop landraces, livestock breeds, forestry species (Non-Timber Forest Produce) and diverse habitat types. Such efforts are confined to remote rural clusters where naturally occurring biodiversity still exists but are fast getting eroded. Hence, efforts are also being made to preserve the traditional wisdom and knowledge base on biodiversity.

The major areas include:

- In-situ and Ex-situ Conservation actions
- Sustainable use of bio resources
- Restoration
- Value addition
- Marketing



- Employment generation
- Preservation of folk knowledge
- Generation of new knowledge

Under the livestock resource, focus is on *in-situ* and *ex-situ* conservation of local/ indigenous breeds of cows, buffaloes and goats. There are numerous local breeds and strains which are known for certain common characteristics such as hardiness, resistance to diseases, and ability to withstand harsh ecological conditions. BAIF programmes focus on many local breeds of cows such as Gir, Tharparkar, Dangi, Gaolav, Lal-Kandhari, Khillar, etc., Banni breed of buffalo and Usmanabadi, Berari and Black Bengal, etc breeds of goats. The efforts include rearing of bulls, establishing semen banks for conservation and multiplication, doorstep services, advice and training for scientific management of cattle units.

The NTFP and Habitat conservation component of this programme focusses on *in-situ* and *ex-situ* conservation of useful and endemic forestry species and setting up eco restoration processes in natural but degrading habitat.

Under crop theme, the focus is on conservation of diverse local cultivars including paddy, millets, maize, sorghum, local vegetables, beans and wild food resources such as wild vegetables and fruits. This diversity acts as a safety net for vulnerable farmers against the ill effects of climate change. The interventions include characterisation of crop types using scientific methods, germplasm collection, identifying traditional seed keepers, participatory varietal selection, seed purity maintenance, collecting morphological data, innovative trials for propagation, innovative agro techniques, productivity enhancement and pest and disease management for improved performance and adoption of shortlisted local

cultivars, standardisation of storage techniques and processing and value addition for providing financial incentives to the producers.

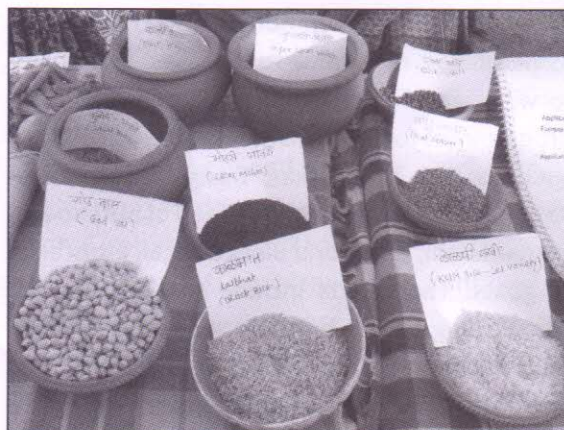
A recent initiative has been the conservation of biodiversity in a participatory mode undertaken under the Maharashtra Gene Bank Project to address the existing gap of *in situ* conservation of bio resources and checking the erosion of valuable genetic resources and knowledge associated with it. The project also aims at realising the objectives of improved food security, livelihood gains and risk mitigation capacity of rural and tribal communities living in diverse agro climatic zones of Maharashtra. The programme focusses on diverse local cultivar, local breeds of animal, local NTFP vegetation types and local habitats and conservation of ecological functions.

This is being implemented as a multi stakeholder initiative with PRIs, community, Community based Organisations, Civil Society Organisations, Government Academia and Research Institutes working towards conservation and revival of region-specific bio resources.

Some of the unique characteristics of traditional rice varieties cultivated in BAIF's project location at Jawhar in Palghar district and Dhadgaon in Nandurbar district have been documented.

With the changing climate change and emerging threat of vulnerability due to variability of climatic factors, such efforts towards agro biodiversity conservation and revival, are significant in sustaining the regional biodiversity, ensuring food and nutrition security for vulnerable communities, reducing climate sensitivity of agriculture while creating opportunities for improved livelihood and risk mitigation capacity of small farmers and their future generation.

List of Landraces/Local names	Description
Dula, Hari, Kali khadsi, Dangi (Red), Hari bhat, Dhundune	As these landraces mature between 70-95 days, they are a source of food security during inadequate rainfall.
Javayachi gundi	This mid late landrace can grows well in upland and low land. Good yield and non-lodging and non-shattering properties
Kasvel, Kasbai	These landraces can withstand deep water and non-lodging



Denomination	Description
Finger millet	
Piter bendri	Early maturing landrace (matures at Sarvpitri ञmavasya and hence denominated as Piter bendri)
Dasar bendri	Matures during Dussehra festival and hence denominated as Dasar bendri. Non lodging and good for sloppy land. Can withstand stress conditions
Kalperi	Pinnacle shape is compact and hence can survive in high rainfall. As there is blackish, anthocyanin colouration on internodes of each plant, it is denominated as Kalperi
Shitoli Nagli	Spicklets are longer, late maturing, water stress tolerance
Proso Millet	
Dudh mogra	Milkish white coloured and hence denominated as Dudh mogra. Good market value. Very less weight loss during storage. Midlate maturing and can withstand high rainfall
Garvi varai	Tall; Non lodging, water stress tolerant
Barnyard Millet	
Banty (Barnyard Millet)	Grown in low fertility soil with less water holding capacity. End use - sweet , liquid gruel, seed sowing by broadcast method, given to expectant mothers as nutritive food

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