



Merchandising of biodiversity

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Ecosystem stewardship

- **Ecosystem Stewardship:** It is an action-oriented framework to foster socio-ecological responsibility for a rapidly changing planet.
- It is a strategy to respond to and shape socio-ecological systems under conditions of uncertainty and change to sustain the supply and opportunities for use of ecosystem services to support human well-being.

Biodiversity

- ◉ Some loss are irreversible.
- ◉ Loss of biodiversity is widely being recognized everywhere – recall articles done by Raven and Holdren.
- ◉ Loss of plant and animal species and possible danger of release of new GMOs.

>>> GR to GMO revolution

Who owns agricultural genetic resources and those which are found in the wilderness?

- Genetic resources (food, seeds, fisheries, forestry) are a positive environmental good in most societies. They are an ecosystem service provided by those engaged in farming full-time or part-time as part of the primary sector.
- International Convention for Biodiversity was established in Rio in 1992, abolished the idea of genetic resources being common heritage of humans. The convention leaves ownership to national legislation.
- This is where ownership of seeds by companies like Monsanto becomes problematic.

Vavilov – germplasm

- N. Vavilov (geneticist from Leningrad) in 1920s identified main centres for agricultural biodiversity in the world where initial agricultural revolutions took place. The center of origin (or center of origin) is a geographical area where a group of organisms, either domesticated or wild, first developed its distinctive properties. Centers of origin are also considered centers of diversity. This allows one to locate wild relatives, related species, and new genes (especially dominant genes, which may provide resistance to diseases).
- Knowledge of the origins of crop plants is important in order to avoid genetic erosion, the loss of germplasm due to the loss of ecotypes and landraces, loss of habitat (such as rainforests), and increased urbanization.
- Germplasm preservation is accomplished through gene banks (largely seed collections but now frozen stem sections) and preservation of natural habitats (especially in centers of origin).
- While developing his theory on the centres of origin of cultivated plants, Vavilov organized a series of botanical-agronomic expeditions, and collected seeds from every corner of the globe. In Leningrad, he created the world's largest collection of plant seeds [cf. http://en.wikipedia.org/wiki/Nikolai_Vavilov]

World centers of origin of Cultivated Plants

1. South Mexican and Central American Centre
2. South American Center
3. Mediterranean Centre
4. Middle east
5. Ethiopia
6. Central Asiatic Centre
7. Indian Centre
8. Chinese Center

Cf. http://en.wikipedia.org/wiki/Center_of_origin,
21Feb 2014.

Corporate bio-prospecting

- Many indigenous groups are quite suspicious of corporate bio-prospecting and patenting activities.
- bio-prospecting becomes bio-piracy [a violation of their human rights and appropriation of their common property resources and heritage]
- Many farmers in India do not subscribe to the idea of IPR in commercial agricultural seeds as seen in GATT negotiations.
- Groups are resisting such commercialization of agriculture (high response varieties/HYVs and genetically modified crops have evinced a strong critical response). Lower straw production in HYV is being recognized as an important economic loss.

Preserving Agro-Biodiversity

- FAO (Food and Agricultural Organization) and International Convention of Biodiversity have proposed creation of a fund for international conservation of plant genetic resources [Shiva's *navodyna*]. Hence, ethno-botanical stations and labs may be set up to preserve or museumize the rapidly disappearing biodiversity of our Earth.
- If biodiversity disappears, the possibility of coevolution will disappear or will be undermined.
- If we leave decisions to market and prices, then perhaps decisions about production and preserving agricultural biodiversity may be in conflict. As farmers may all decide to follow profitable commercial practices as is evident in green revolution and adoption of Bt cotton.
- Few traditional farms may be preserved as exemplars. Hence, idea of ecological debt to farmers as conservationists or preserving biodiversity by following traditional crops or practices.

Technical progress & profit

- new seed varieties has led to biological impoverishment by replacing diversity with uniformity, security with vulnerability.
- If profitability becomes the yardstick then traditional methods have no future? Farmers do exchange seeds outside the market. Some seeds now have terminator technology – Bt varieties.
- Commercial companies will protect their interests citing they have improved seed quality and IPR issues [citing UPOV system - http://www.upov.int/about/en/upov_system.html]. Many genetic resources are now being controlled by MNCs while there is recognition to store genetic diversity in gene banks maintained by public institutions.
- Should we conserve bio-resources using and following the market principle? Who would pay these costs? Or should communities be assigned the role and considered the natural owners of their resources?

Farmers vs. Scientist

Knowledge is not static, but continuing to evolve through experimentation and improvement for centuries.

- For centuries and over generations, tribals and farmers have been domesticating and improving agricultural practices and seeds, conserving and preserving biodiversity, and innovating in agricultural practices, do we forget their rights? Do we de-recognize or override rights of farmers as they are not covered under any IPR regime? What about medicinal varieties?
- We have recognized superiority of modern medicine and traditional pharma industries. Example of Neem based pesticides. How should peoples access to these resources be controlled or reworked?
- What should be farmers' rights? If knowledge is transferred to an external group without any compensation? How do we assign a value to conservation of knowledge about biodiversity? How do we assess and do we need to commodify these essential ecosystem services? Eg of Kani tribe. Who should get how much from this common fund or be recognized as a heir to knowledge?
- Do scientists have rights to patent because their work is being undertaken in research labs and they file the same? Do corporations enjoy special privileges due to their investment in high-end research?

Farmers role in conservation

- Ecological movements have arisen to support biological diversity and opposed patenting of traditional/indigenous knowledge. Neem and yoga are clear examples. There is loads of knowledge which persists in the oral tradition and now has not been documented.

Argument: Farmers are stewards, who use and preserve genetic diversity and they should be economically rewarded for the same. Their ethno-botanical knowledge is part of their cultural capital. Farmers contribution to ecosystem stewardship needs to be recognized and also rewarded for the same. CBD does not ensure ownership by farmers and tribals or assign them managerial rights to these resources.

- These are connected with critical issue of commercialization of genetic resources.
- Contradictions between national heritage and world heritage

Erosion of genetic diversity

- Many ecological initiatives have been initiated by farmers groups, local NGOs, and some public institutions.
- How do we quantify genetic erosion? How do we quantify loss of biodiversity? What are the indicators?
- These debates have given rise to idea of ecological costs. How do we compare ecological based reasoning vs. market based reasoning? How will the poor and impoverished farmers participate in this exercise/decision-making?

Preserving conservation of wilderness for biodiversity: cultivated and wilderness capital

- **Germplasm** has important immediate commercial value as a genetic resource for chemical and pharma industries and also as a resource which can be opened for prospective commercialization. WWF mandate is to argue for preservation and conservation of natural biodiversity.
- These groups argue about need for **option value** (future use) and **existence value** (protect an endangered species such as whales – Greenpeace).
- Emerged as a big arena of conflict due to big world-wide movements for need for preserving wilderness and local peoples needs for accessing resources or dependence on forests for their livelihood and basic needs.
- Relationship persists between wild and agricultural biological diversity, with some arguing for agricultural genetic resources being termed cultivated natural capital. Can everything in nature be reduced into a commodity/merchandise? How do we quantify the cost of reversing ecological degradation? How do we assess market value of reversing chemical pollution or loss of biodiversity?
- How do we reconcile interests of those who are heavily dependent on forests and wilderness for their survival? In India, we have the Forest Dwellers Act, 2006 [also called the Tribal Land Act 2006]

Forests as Commons, 2006

The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 is a result of the protracted struggle by the marginal and tribal communities of our country to assert their rights over the forestland over which they were traditionally dependent.

This Act is crucial to the rights of millions of tribals and other forest dwellers in different parts of our country as it provides for the restitution of deprived forest rights across India, including both individual rights to cultivated land in forestland and community rights over common property resources.

The notification of Rules for the implementation of the Forest Rights Act, 2006 on 1st Jan 2008, has finally paved the way to undo the 'historic injustice' done to the tribals and other forest dwellers [<http://www.fra.org.in/new/>]

Rights and recognizing them

- ◉ Degrees of environmental concern vary across
- ◉ Like any law, there are two sides of the coin
- ◉ Implementation of this act is a larger debate [we are not covering this here]