Sociology and Resource Management
Prof. Archana Patnaik
Department of Humanities and Social Sciences
Indian Institute of Technology, Kharagpur

Module - 02
Community control of natural and man-made resources
Lecture - 10
Agricultural biotechnology, open source and commons

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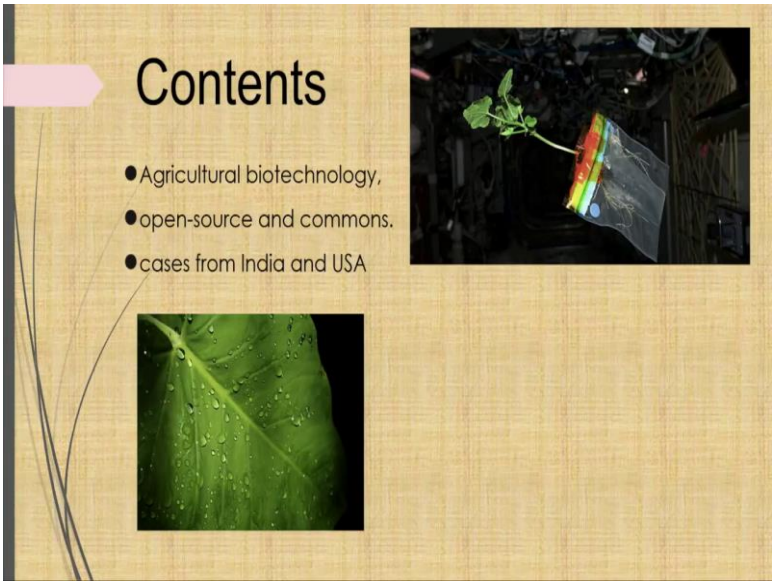

Today, we will be discussing Agricultural biotechnology, open source, and commons. And we will do so, by reflecting on cases from India and USA.

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When we talk about agriculture, the debate surrounding it can be divided into two broad categories; 1st, the debates on technological transformation like the green revolution and the gene revolution, which were done using biotechnology. Where, the green revolution by using high-yielding varieties changes was brought in the production process itself, like the use of synthetic fertilizers and pesticides were implemented on a large scale and it was only introduced during the green revolution period.

And the gene revolution was where using technology changes were brought within seed manufacturing to become genetically modified seeds. 2nd is the debate on intellectual property rights. Like the bio-piracy which we were discussing earlier and the monopoly, where patents were used to control agricultural production, which also we have discussed in the earlier module.

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In today's module, we will discuss the different practices of repossession and communication of seeds in India which are described in the article that analyses the two non-governmental organizations, the Loka Samabaya Pratisthana and the Sambhav. Both are based in the Eastern State of Odisha and working towards the repossession of seeds. This is an article that was published and written by me.

Further, parallel practices of repossession through open-source mechanisms. Analyzing the open-source seed initiative in the USA and the open-source seed system in the Indian context will also be reflected to give you an overall perspective.

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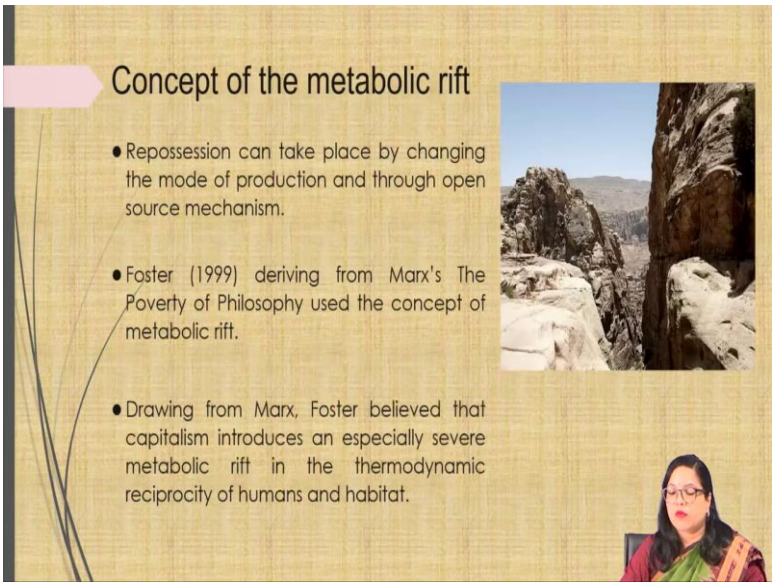

Repossession can take place by changing the mode of production and through open-source mechanisms. Foster derived from Marx's ideas like the poverty of philosophy using the concept of metabolic rift. Drawing from Marx, Foster believed that capitalism introduces an especially severe metabolic rift in the thermodynamic reciprocity of humans and the habitat.

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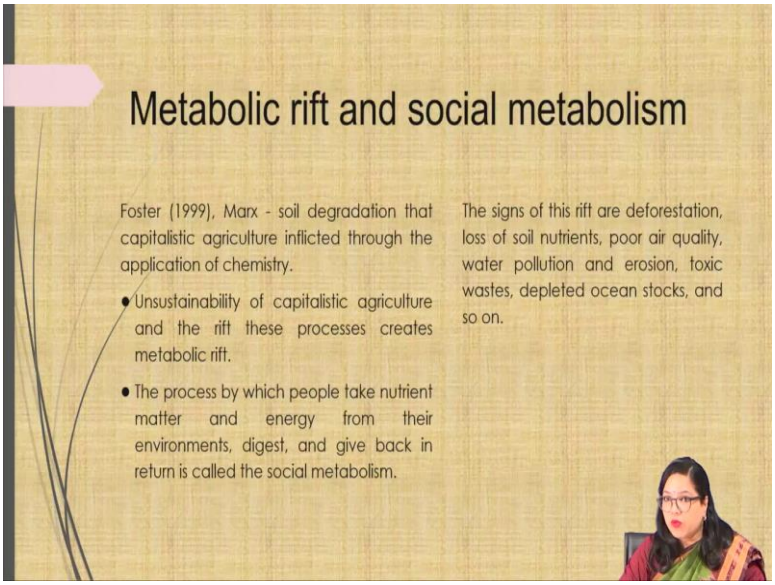

According to Foster, Marx there emphasized the condition of soil degradation that capitalistic agriculture inflicted through the application of chemical fertilizers. For him,

the unsustainability of capitalistic agriculture and the rift that the processes create also create the metabolic rift. The process by which people take the nutrient matter and energy from their environment, digest it, and give it back in return is called social metabolism.

Throughout history, some modes of production and forms of labour have been more disruptive of these material transfers than others. The sign of this rift is deforestation, loss of soil nutrients, poor air quality, water pollution and erosion, toxic waste, depleted ocean stock etcetera.

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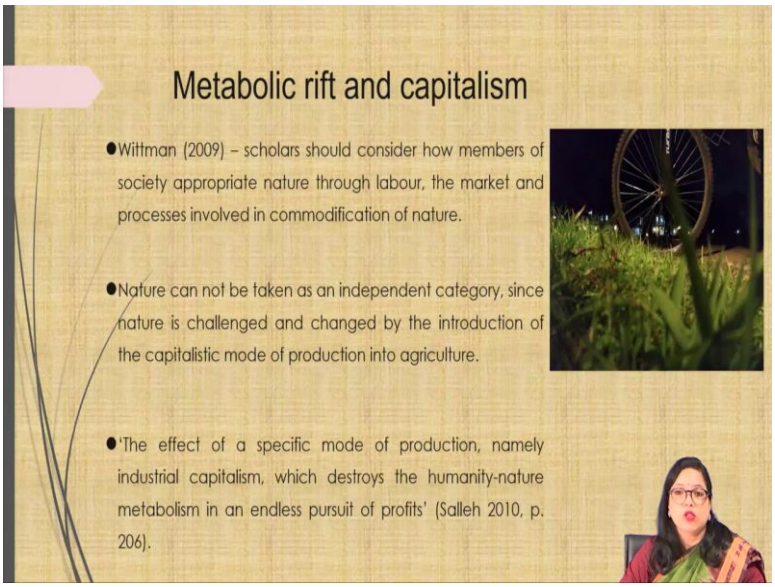

To understand metabolic rift according to Wittman, scholars should consider how members of society appropriate through labour, the market, and the processes involved in the commodification of nature. Thus, nature cannot be taken as an independent category since nature is challenged and changed by the introduction of the capitalistic mode of production into agriculture.

The metabolic rift is thus comprehended as the effect of a specified mode of production, namely industrial capitalism, which destroys the human-nature metabolism in an endless pursuit of profit. And this was described by Salleh.

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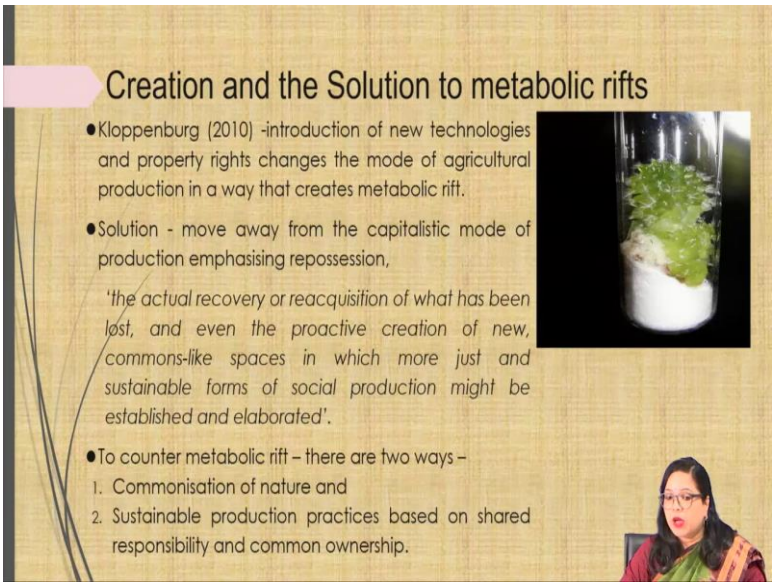

Kloppenburg emphasized how the introduction of new technologies and property rights changes the mode of agricultural production in a way that creates a metabolic rift. Kloppenburg's solution to this, therefore, was to move away from the capitalistic mode of production emphasizing repossession.

Which according to him is the actual recovery or the reacquisition of what has been lost, and even the proactive creation of new common-like spaces in which more than just and sustainable forms of social production might be established and elaborated. To counter the metabolic rift then there are two ways, one is the commodification of nature and sustainable production practices based on shared responsibility and common ownership.

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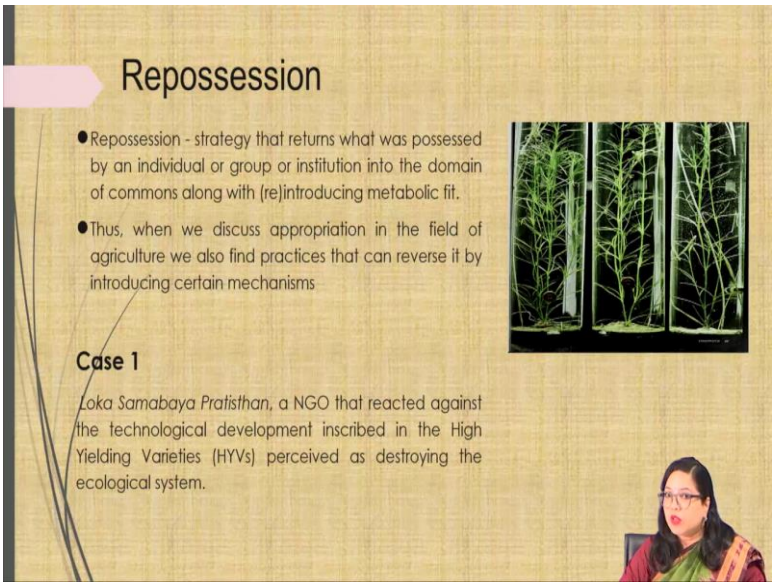

Repossession, then not only operates as a strategy that returns what was once possessed by an individual or a group or an institution into the domain of commons but also reintroduces in that case the metabolic fit. Thus, when we discuss appropriation in the field of agriculture, we also find practices that can reverse it by introducing certain mechanisms.

To provide you with cases, I will first reflect on Loka Samabaya Pratisthana, NGO that reacted against the technological development inscribed in the high-yielding varieties perceived as destroying the ecological system.

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LSP has organizational seed banks which are situated at different places in small rooms in various farm outbuildings, huts, and houses in Narciso village, Odisha, where traditional varieties of seeds are conserved. For LSP, the ecological damage that the pesticide does to people and the ecosystem was the major factor impaling a return to the practice of conserving seeds and re-engaging with traditional agricultural practices.

The cultivation of high-yielding varieties requires a high amount of pesticide and fertilizer application, which creates ecological losses. Thus, it was the ecological losses caused by the cultivation of the high-yielding varieties that led the LSPs founder Mister Natwar Sarangi to look for alternatives or alternative means of doing agriculture.

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The use of improved variety was seen as creating the metabolic rift between nature and society through the use of chemical fertilizers and pesticides required by the new varieties. Sarangi looked for closure of this rift through natural farming and adopting ecological ways of doing agriculture.

He found that the main requirement was to use the land resist varieties, which do not need intensive pesticides and can be cultivated using natural inputs, puts as neem cakes as pesticides and cow dung as the manure. And inspired by the ethos of organic farming, began looking out for the landrace's varieties in the nearby areas and then saving and storing them in their organizational seed banks.

Motivated to challenge the institutional practices of the high-yielding varieties, Sarangi started by collecting and sharing landraces varieties with interested farmers; then, over some time, he was able to appoint a few people to collect the landraces varieties, using their informal networks first from different villages and then from different states. The collection and expansion through informal networking were to become the LSP strategy.

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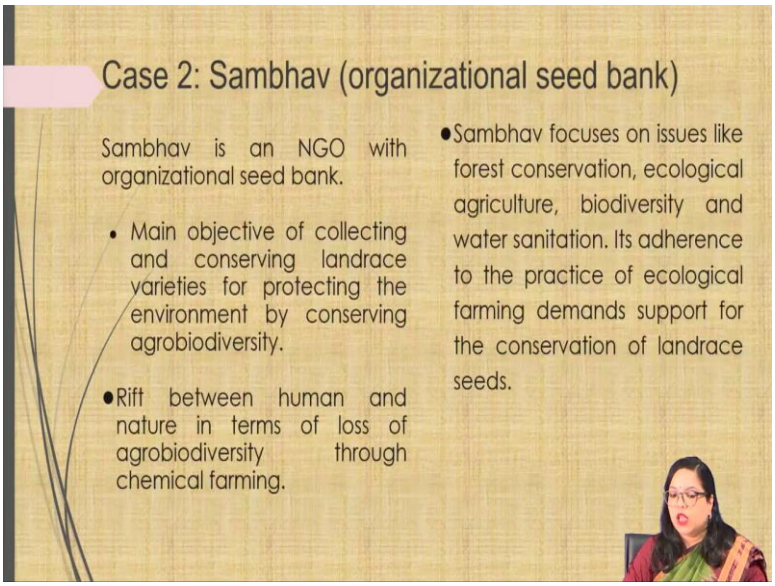

The second case from India is of Sambhav. Sambhav is an NGO with an organizational seed bank with the major objective of collecting and conserving landraces varieties for protecting the environment by conserving agro-biodiversity. Sambhav's founders visualize the rift between humans and nature in terms of the loss of agro-biodiversity through chemical farming. Sambhav focuses on issues of forest conservation, ecological agriculture, biodiversity, and water sanitation.

It adheres to the practices of ecological farming which demands to support for the conservation of the landraces varieties. Sambhav collected the seeds which are now stored at Sambhav's organizational seed bank to bring more and more seeds to the organization and ultimately to the farmers.

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The members of Sambhav collected seeds from wherever they could and whichever means they could from all over India. Thus, by collecting landrace variety seeds Sambhav gradually became able to challenge or change the use of high-yielding varieties. This informal networking served as an important means of collecting and sharing traditional varieties for use locally and beyond instead of seeds or the high-yielding varieties developed through public institutions with international collaboration.

Here, we find the usage to reconnect resources like the landraces seeds with the farmers through conservation and sharing by both the NGOs as a tool counted the metabolic rift created by the high-yielding cultivation and the association with the agro-biodiversity loss.

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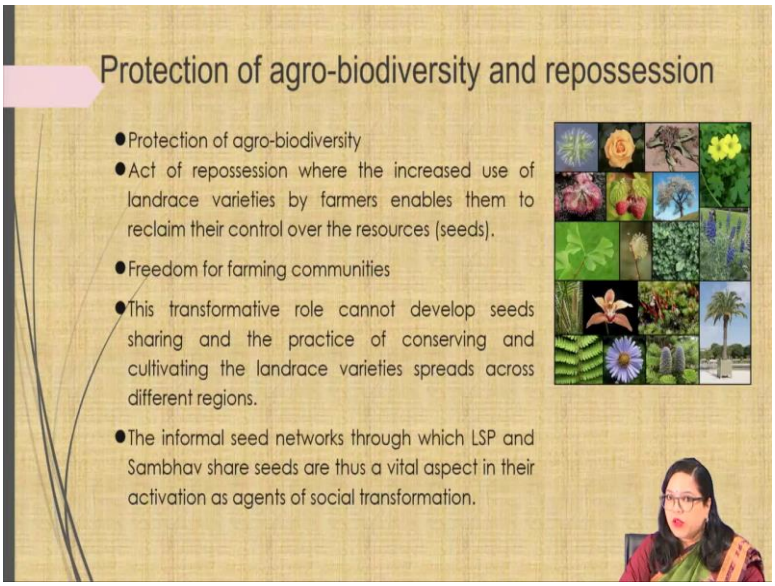

The objective of LSP and Sambhav in collecting different varieties to enrich the seed collection and protect agro-biodiversity also leads to an act of repossession, where the increase in the use of landraces varieties by the farmers enables them to reclaim or reclaim their control over the resources that is the seed.

This returns to the farmer, the farming community of freedom that they had lost earlier and even extends it through the varieties that grow well locally. This transformative role cannot develop unless the seeds are shared and the practice of conserving and cultivating the landraces varieties spread across different regions. The informal seed networks through which LSP and Sambhav share seeds are thus a vital aspect of their activation as agents of social transformation.

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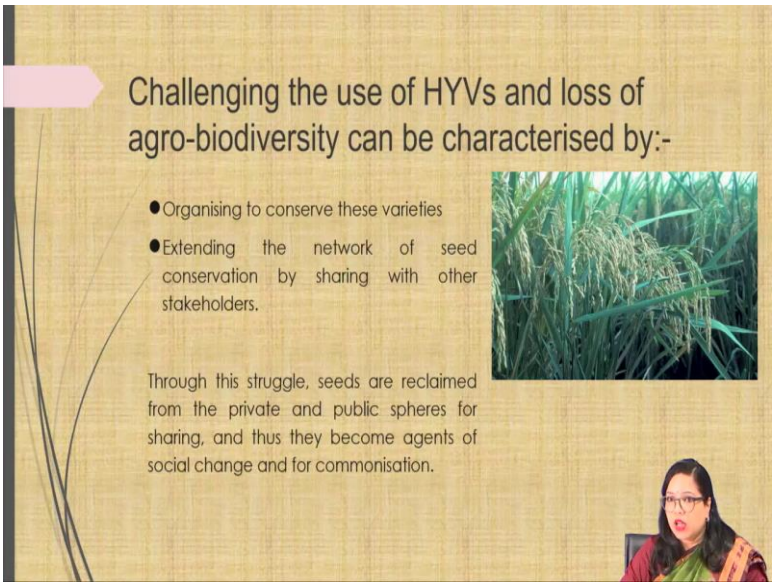

Summarizing the struggle of both the NGOs challenging the use of high-yielding varieties and the loss of agro-biodiversity, it can be characterized into two types. First is finding materials that are the landraces varieties. And second is organizing to conserve these varieties, like within their organizational seed banks.

Extending the network of seed conservation by sharing with another stakeholder through these struggles, seeds are reclaimed from the private and the public sphere for sharing, and thus they become agents of social change and the commonisation.

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Now, let us discuss cases on open source that is open source seed initiative of the United States and open-source seed system that is based in the Indian context. The open-source movement gradually made its way into the agricultural sector. Any project needs to possess certain characteristics to qualify as an open-source project. Among them, some of them are full disclosure of the data or information including the documented source code. This ensures the sharing of data or information

Use of legal instrument, that is a copyleft license. This ensures permissive rights to the users of the shared data or information as well as confers some responsibilities on the users of the shared data or information. And the third, creating commons, here a set of resources that are shared and remain accessible to all.

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Open-source agriculture is more of a restoration than a revolution, as agriculture always develops on sharing and exchange of seeds and materials. This was according to Boettiger and Wright. The open-source tool thus encouraged and rewarded the sharing in agriculture through open-source licenses to preserve the rights of the users as opposed to the restrictive rights that were provided by the intellectual property rights. According to Kloppenburg.

The open source seed initiative and the open source seed system are examples of these indirect approaches aimed at repossessing seeds from the restrictive intellectual property rights by use of the open source license.

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The open-source seed initiative of the USA aims at the repossession of seeds by denying the corporate dominance created by intellectual property laws. In contrast to the closed system of intellectual property rights, OSSI seeds remain a protected common for further use. OSSI also uses laws and gaps in the current IPRs system to approach its goal indirectly working through the legal rights by using a licensed system that broadens the horizon of access and sharing.

Like that of the open-source software, we discussed earlier. The repossession of the open source system, thus the repossession of the open source seed initiative challenges the restrictive institutional arrangements, such as that of intellectual property rights.

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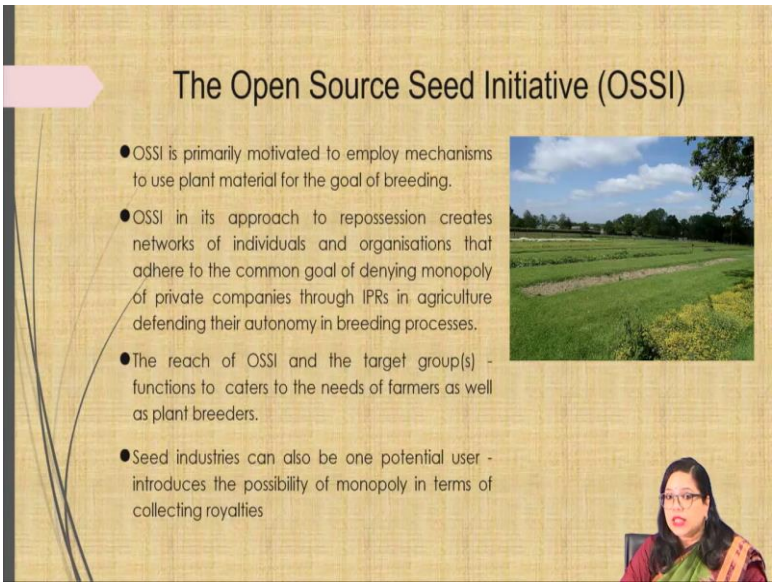

OSSI is primarily motivated to employ mechanisms to use the plant material for the goal of breeding. OSSI in its approach to repossession creates networks of individuals and organizations that adhere to the common goal of denying the monopoly of private companies through intellectual property rights in agriculture defending their autonomy in the breeding process.

The reach of OSSI and the target groups are still not fully established, though it does function in a way that caters to the need of the farmers as well as the plant breeders. However, seed industries can also be one potential user which again introduces the possibility of monopoly in terms of collecting royalties.

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In India, the introduction of new technologies like genetic modification is visualized as a potential threat to the freedom and autonomy of farmers. Initiatives like OSSI which do not restrict the derivative use of the resource under the protected commons and its application in agriculture including genetic modification may be regarded as contradictory to the goals of the grassroots organizations in the Indian context.

From 30 to 31st of August 2014, the Organic Farming Association of India organized a workshop aimed at funding finding ways to go about dismantling the industrial monopoly of seeds through the introduction and development of an open-source seed system in India.

The initiative developed the open source seed system in India occurred as a reaction to the introduction of intellectual property rights, particularly addressing the drawbacks of the Indian protection of Plant Varieties and Farmer’s Rights Act, and the Biological Diversity Act.

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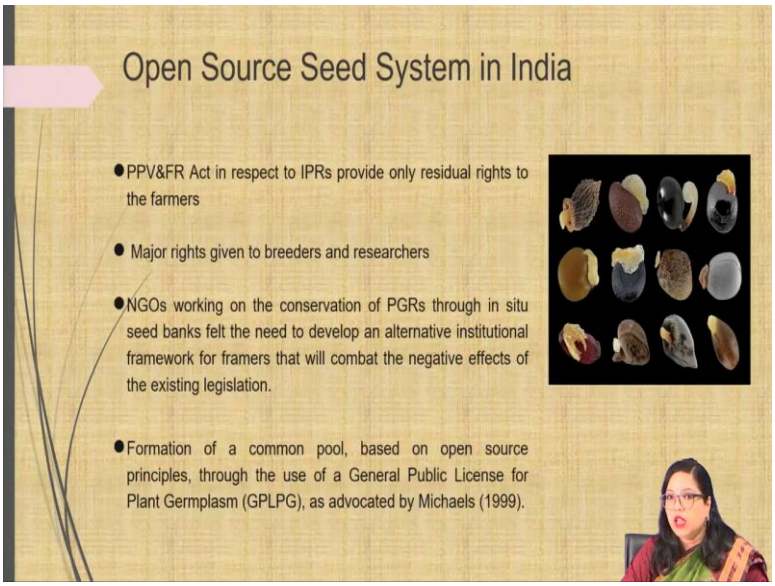

According to the CSA report, the provision of the PPV and FR Act concerning intellectual property rights provides only residual rights to the farmers concentrating the major rights on the breeders and the researchers, which the open source seed system aims to address by broadening the privileges of the farmers.

Various NGOs working on the conservation of plant genetic resources through the in-situ seed banks felt the need of developing an alternative institutional framework for the farmers that will combat the negative effects of the existing legislation. Thus, the organic farming association of India's conception of an open-source seed system included the formation of a common pool, based on the open-source principle through the use of the General Public License of the Plant Germplasm that GPLPG, as was advocated by Michaels in 1999.

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The open-source seed system does not develop a license of its own, but rather relies on the GPLPG for sharing access to seeds. According to the CSA report, the general public license does not require a new legal institution as it operates through the material transfer agreement which is well established in the Indian context.

OSSI by contrast is based on the principle of open source with a royalty-bearing license which is developed under the OSSI. These differences in the choices of OSSI and OSSS can be seen as a reflection of their socio-political context.

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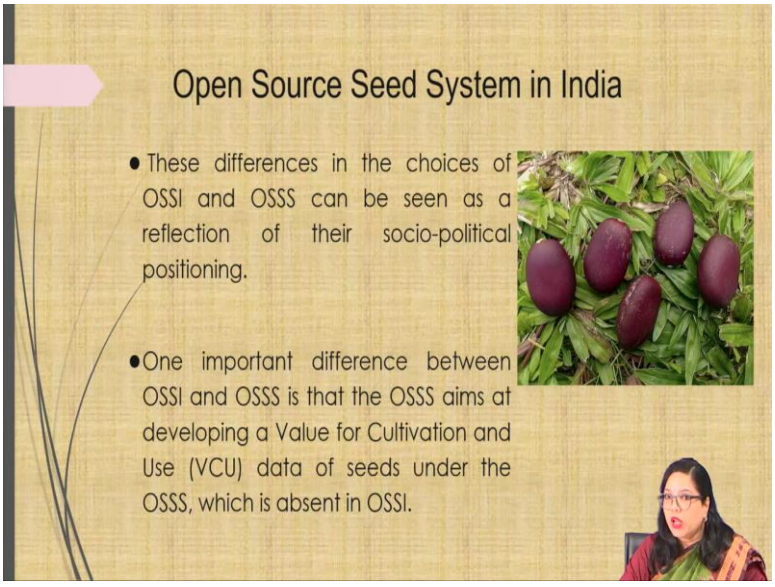

One of the important differences between the open source seed initiative and the open source seed system is that the open source seed system aims at developing a value for cultivation and use which is known as VCU, data for seeds under the open source seed system, which is absent in case of open source seed initiative.

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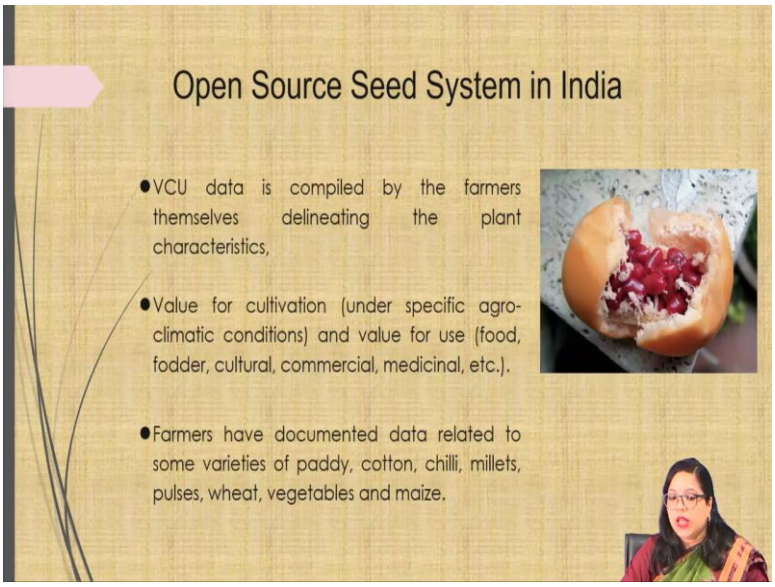

VCU data is compiled by the farmers themselves delineating the plant characteristics, value for utilization value for cultivation under specific agro-climatic conditions, and value for use like food, fodder, cultural, commercial, medicinal etcetera. The farmers have documented data related to some varieties of paddy, cotton, chili, millets, pulses, wheat, and maize in this regard.

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This attempt at an open-source seed system also connects the varieties with the farmers and their knowledge. Further, providing data to the farmers can help them in deciding, which variety to choose from for their cultivation and breeding processes. For the implementation of the open-source seed system in the Indian context, the CSA report advocated the development of the open-source principle through a seed network called the Open-Source Seed Network or OSSN.

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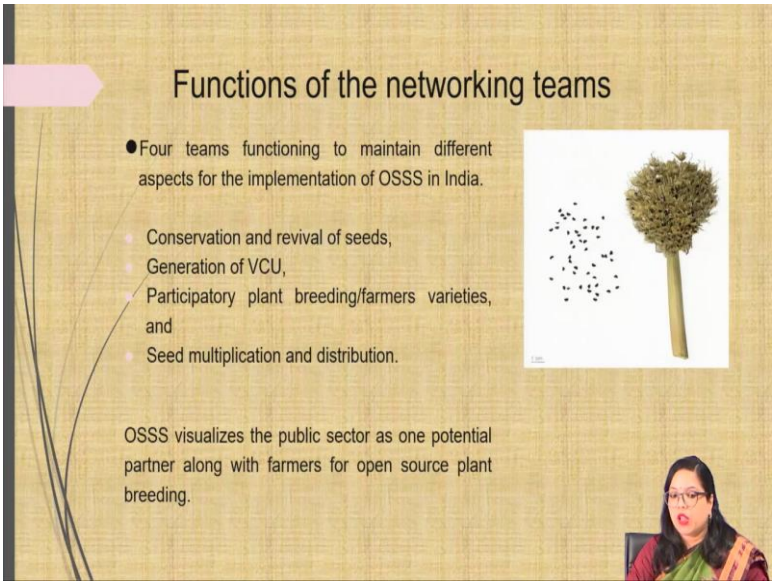

This network comprises four teams functioning to maintain the different aspects of the implementation of the open-source seed system in India. These teams focus on one the conservation and revival of seeds, generation of VCU, participatory plant breeding and farmer's varieties, and seed multiplication and distribution.

It should also be noted that the open-source seed system visualizes the public sector as one potential partner along with the farmers for open-source plant breeding. Open source seed system advocates for participatory varietal development along with the public sector to enrich the breeding process.

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The idea of an open-source seed network is to form the basis for coordinating efforts of various NGOs and public sectors at the national level. Here, therefore, we find the creation of a space of commons where individuals and groups, negotiate and defend their common lived experiences.

Individuals and groups sharing this space are thus connected through a new kind of or through a new culture of relatedness, in which the farmer's linkages are based not on kinship or biology, but through common management of other biological species that is the plant and the seeds. And this common culture or new culture of relatedness was given by Asthera.

Rather than the traditional static social relations of family and village, it is the active dynamic of what farmers do in the farming practice that connects them. It is also interesting to find that the open-source seed network plans to bring in the public plant breeding sector into the network, finding similarities between the motives. That is developing varieties without restrictive rights of the two.

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One important difference between the approach of the open-source seed initiative and the open-source seed system is that the open-source seed system looks at the farming community as an important creator and facilitator of its initiative. Whereas, the open source seed initiative approach considers the plant breeder as important for facilitating the open source seed initiative, being based in the United States context.

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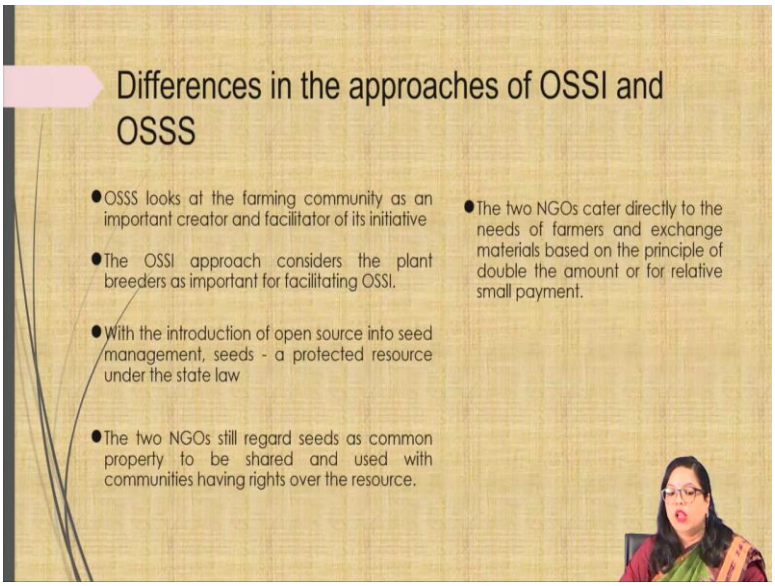

Referring to the practices of the two NGOs that were studied here, we find a different understanding of repossession in the case of the open-source seed initiative. With the introduction of open source into seed management, seeds tend to be seen as a protected resource under state law. Whereas, the two NGOs still regard seeds as a coon property, to be shared and used when the community has rights over the resources.

The NGO employed the more direct mechanism of an informal seed-sharing system through networking and focus on changing agricultural production without giving much consideration to the legal mechanism.

Thus, the two NGOs cater directly to the needs of the farmers and exchange materials based on the principle of double the amount or for a relatively small payment.

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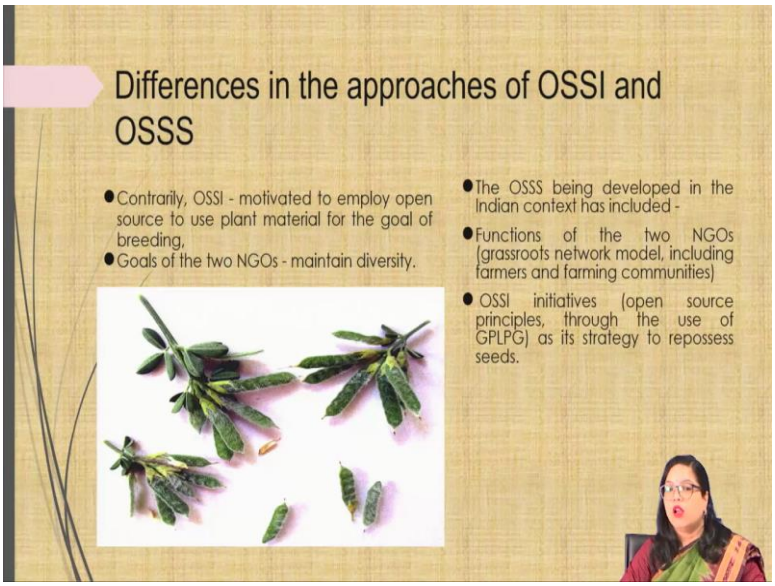

On the contrary, the open-source seed initiative is primarily motivated to employ the open-source use of plant materials for the goal of breeding, which again is quite different from the goals of the two NGOs for maintaining diversity.

The open-source seed system being developed in the Indian context has included some functions of the two NGOs. That is a grassroots network model including farmers and the farming community. And the open-source seed initiatives like function on the open-source principles through the use of GPLPG, as its strategy to repossess seeds.

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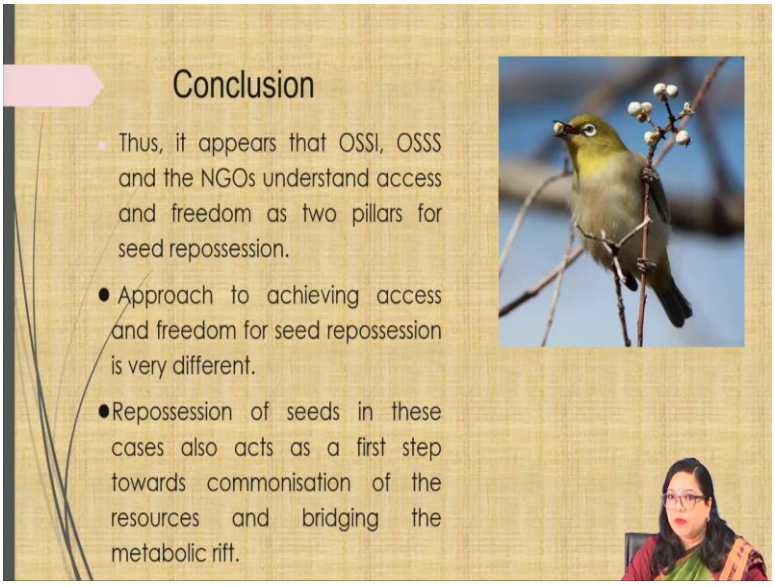

Thus it appears that OSSI, OSSS, and the NGOs understand that access and freedom are the two pillars of seed repossession, but their approach to achieving access and freedom for seed repossession is again very different. Repossessions of seeds in these cases also act as the first step towards the commonisation of the resources and bringing in the metabolic fit.

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Through these cases, we can see how open source and commons are operating in the agricultural field, where the idea of bringing in commons or commoning the seed for all 4 cases is the same.

Thank you for listening. And have a great day ahead.