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## Role of tribal women in the conservation of agricultural biodiversity in Jharkhand

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**Abstract :** The study shows the significant contribution of tribal women towards the conservation of agriculture biodiversity in Jharkhand. Women help in the situ conservation of many traditional cultivars thus helping preserve them.

**Key Words:** Agro biodiversity, sustainable, conservation.

### INTRODUCTION

Jharkhand is a state in eastern India carved out of the southern part of Bihar in 2000. It has an area of 74,677 Km<sup>2</sup>. The state has a population of 26.90 million. The population consists of 28% tribal, 12% scheduled castes and 60% others. The sex ratio is 941 females to 1000 males.

Most part of the state lies on the Chotanagpur Plateau, which is the source of rivers like Koel, Damodar and Subarnrekha. The climate is moderate with summers ranging from 16<sup>o</sup> – 40<sup>o</sup> C and winters from 10<sup>o</sup> – 28<sup>o</sup>C. Soil composition varies from red soil (Damodar Valley) micaceous soil (Koderma) black soil (Rajmahal) to laterite soil (Santhal Pargana).

Jharkhand has remained home to number tribal communities since time immemorial. It has 32 tribal groups. They are :

- Asur      • Birhor      • Kisan      • Mal paharia
- Baiga    • Chero      • Kora      • Munda
- Banjara • Chick - Baraik • Korwa    • Oraon
- Bathudi • Gond      • Kol      • Parhaiya
- Bedia    • Gorait     • Kanwar • Santhal Paharia
- Binjhia • He          • Khond    • Sauria
- Bhumij • Kharwar    • Lohar    • Savar
- Birjia    • Karmali    • Mahli

Prof. L. P. Vidyarthi classified the tribes of Jharkhand as:-

- Hunter – gatherer type – Birhor, Korwar
- Shifting agriculture – Suria Paharia
- Simple artissans – Mahli, Lohra, Karmali, Chick Bariak.
- Settled agriculturists – Santhal, Munda, Oroan, Ho, Bhumji.

Agricultural biodiversity is a broad term that includes all components of biological diversity of relevance to food and agriculture.

Biodiversity and agriculture are strongly interdependent because while biodiversity is critical for

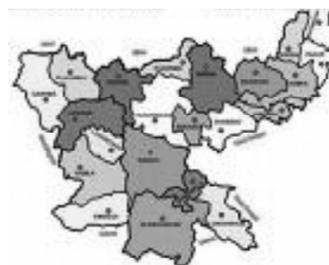
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agriculture, agriculture can also contribute to conservation and sustainable use of biodiversity. The loss of diversity in food crops is the greatest threat to food security.

### Importance of Agriculture Biodiversity



Biodiversity is essential to :

- Ensure the production of food, fodder, fuel and fiber.
- Maintain other ecosystem services such as soil and water conservation.
- Allow adaptation to changing conditions – including climate change.
- And sustain the livelihood of rural people.

In agriculture societies around the globe women have tended to be the custodians of biodiversity. Tribal and rural women living mostly in biodiversity rich areas possess a wealth of knowledge about the use and conservation of plant genetic diversity. This knowledge, collected and developed over years of observation by trial and error, inference and inheritance has remained with the tribes.

In Jharkhand, tribal women play an important role and take part in all activities right from farming, collecting food, fodder and fuel from the forest to marketing their produce in local hats. There is no restriction to their movement unlike other communities. Because of their multiple roles and responsibilities as providers of food, fodder, fuel, health care and other household needs, women have knowledge of various uses of plants. They have clear understanding

of seasonal variations and availability of these edible and medicinal plants. They procure food items from the wild according to the season or whenever they are required.

They consider many detailed criteria other than high yield & market price e.g. taste, cooking time, crop yield, ease of processing, resistance to pests etc, on the basis of their experience. Men are normally responsible for mono cropping systems and women for more diversified systems such as home gardens. Such diverse systems can be referred to as “living genebanks” that are used for *in situ* conservation and sustainable use of a wide range of plant genetic resources.

Women play very important role in

- *Food Production* – in addition to farm and household work women are the custodians of families food basket. They also collect various wild plants and grow them in their kitchen gardens.
- *Seed Selection* – the elderly women in the family is given the honour of selecting seed for storage. They constitute a “memory bank” of indigenous germplasm.

Most of the tribes prefer traditional cultivars which are drought resistant and to some extent disease resistant

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and pest tolerant. They do well when given domestic refuse and green manure. These crops have been preserved due to the conservation habit of these communities over the years. These traditional cultivars also suit local dietary habits and can be easily cultivated without external input.

- *Seed Storage* – after harvesting their crops, the women set aside a considerable quantity as sowing material. This seed is not used for consumption as food. Instead the women substitute them by other edible resources from the forest. Their traditional way of storing grains in indigenous granaries has helped indirectly in maintaining their viability. These granaries keep off rodents and pests. They also use



the leaves of some plants (e.g. *Azadirachta indica*) to repel storage pests.

- *Harvesting*
- *Food Processing*
- *Maintaining soil fertility* – Tribal women play an important role in maintaining as well as restoring the fertility of soil. They apply biofertilizers such as cattle dung or domestic refuse to the land when required.

Thus they are the “Invisible” partners from grassroots to policy levels.

### Scheduled list of plant species used by the tribal communists in Jharkhand

#### I) Cereals :

In addition to these the tribal women collect many useful products from the forest.

#### PRODUCTS FROM THE FOREST

- 1) Kendu Leaf (*Diosphyrous melanoxylon*) – The leaves are used for making “bidi” raps.
- 2) Bamboo (*Bambusa p.*) – used for a variety of

#### II) Lagumes :



Table 1: Cereals

<i>Scientific Name</i>	<i>Local Name</i>	<i>Use</i>
<i>Avena sativa L.</i>	Jaie	As food grain
<i>Eleusine coracana</i>	Madua	As food grain
<i>Hordeum vulgare L.</i>	Jau	As food grain
<i>Oryza sativa L.</i>	Dhan	<ul style="list-style-type: none"> <li>• As bhat (Boiled Rice)</li> <li>• Powder used to make “Chilka Roti”</li> <li>• Rice Wine, “Hadia”</li> </ul>
<i>Panicum miliaceum L.</i>	Cheena	As food grain
<i>P. sumatrense</i>	Gundli	As food grain
<i>Paspalum scrobiculatum</i>	Kado	As food grain
<i>Setaria itatica L.</i>	Kaumi	As food grain
<i>Sorghum vulgare</i>	Jowar	As food grain
<i>Triticum aestivum L.</i>	Makka/ Janra	As food grain

Table 2: Lagumes

<i>Scientific Name</i>	<i>Local Name</i>	<i>Use</i>
<i>Cajanus cajan L.</i>	Lahar	As pulses
<i>Phaseolus mungo</i>	Urad/Birhi	As pulses
<i>Lathyrus satirus L.</i>	Khesari/Khasari	As pulses

### III) OIL SEEDS:



Table 3: Oil seeds

<i>Scientific Name</i>	<i>Local Name</i>	<i>Use</i>
<i>Azadirachta indica</i>	Neem	As medicinal oil
<i>Brassica campestris</i>	Sarson/Beswar	As edible oil
<i>B. juncea</i>	Rai	As edible oil
<i>Carthmus tinctorius L.</i>	Kusmi/Kusum	As edible oil
<i>Guizotia abyssinica</i>	Surgunja/Ramtila	As edible oil
<i>Linum usitatissimum</i>	Alsi/Adri	As edible oil
<i>Madhuca indica</i>	Mahua/Kachra	As edible and medicinal oil
<i>Pongamia pinnata L.</i>	Karanj	As an antislptic, lamp oil and biofuel.
<i>Sesamum indicum L.</i>	Til	As edible oil

IV) VEGETABLES:



<i>Scientific Name</i>	<i>Local Name</i>	<i>Use</i>
<i>Abelmoschus esculentus L.</i>	Bhindi/Ramtori/Ramjhing	<ul style="list-style-type: none"> <li>• As vegetables</li> <li>• Dried seeds used to make beverage</li> <li>• As medicine</li> </ul>
<i>Amaranthus Sp.</i>	Lalsag/Chaulai	<ul style="list-style-type: none"> <li>• Leaves used to make “sag”</li> </ul>
<i>Amorphophallus commutatus</i>	Jungli Suran	<ul style="list-style-type: none"> <li>• As vegetables</li> <li>• Dried and powdered for storage.</li> </ul>
<i>Artocarpus heterophyllus</i>	Kathal	Fruits & seeds used also as vegetable
<i>Benincasa lispida</i>	Kathua	Used to make “sag”
<i>Chenopodium album L.</i>	Bathua	Used to make “sag”
<i>Coccinia indica</i>	Kundru	As vegetable
<i>Colocasia esculenta</i>	Arvi	leaves petioles, tubers all edible, as vegetable
<i>Cucurbita pepo</i>	Kohda/Khonar	Flowers & fruit edible petha (a sweet) is prepared from the fruit.
<i>Dioscoria alata L.</i>	Suran	Eaten baked boiled or ground into flour.
<i>Ipomea batatas</i>	Kanda	<ul style="list-style-type: none"> <li>• Eaten raw, boiled or roaster</li> <li>• Green top used as fodder</li> </ul>
<i>Legenaria siceraria</i>	Lauki/Loa	<ul style="list-style-type: none"> <li>• As vegetables</li> <li>• Green fruit to prepare sweets</li> <li>• For making water jugs &amp; utensils.</li> </ul>
<i>Luffa acutangula</i>	Jhinga	<ul style="list-style-type: none"> <li>• As vegetables</li> <li>• Dried fruit used as bath sponge</li> </ul>
<i>Lycopersicon esculenta</i>	Bilayti	Eaten raw or cooked
<i>Momordica charantia</i>	Karela/Karla	<ul style="list-style-type: none"> <li>• As vegetables.</li> <li>• Medicinal value</li> </ul>
<i>Moringa oleifera</i>	Joki	<ul style="list-style-type: none"> <li>• Leaves, flowers &amp; fruits edible</li> <li>• Medicinal value</li> </ul>
<i>Raphanus sativus</i>	Mooli/Moola/Murai	Roots and leaves eaten raw or cooked
<i>Solanum melongena</i>	Baigan	<ul style="list-style-type: none"> <li>• As vegetable</li> <li>• Medicinal value</li> </ul>
<i>Solanum tuberosum</i>	Alu	<ul style="list-style-type: none"> <li>• Tubers as vegetables</li> <li>• Small tubers used to make a lcohol.</li> </ul>
<i>Tricosanthes dioica</i>	Patal	As vegetable

**V) Fruits:**



**Table 5: Fruits:**

<i>Scientific Name</i>	<i>Local Name</i>	<i>Use</i>
<i>Agle marmelos</i>	Bel	<ul style="list-style-type: none"> <li>• Eaten as Fruit.</li> <li>• Used to make beverage</li> <li>• Medicinal value</li> </ul>
<i>Artocarpus heterophyllus</i>	Kathal	Eaten as fruits
<i>Coriaria arborea</i>	Toot	Eaten as fruits
<i>Ficus caricat L.</i>	Anjir	Figs edible
<i>Psidium guajava L.</i>	Amrood	Eaten as fruits
<i>Mangifera indica L.</i>	Aam	<ul style="list-style-type: none"> <li>• Eaten as fruit</li> <li>• Young unripe fruits made into pickles, powdered and also used as medicine</li> </ul>
<i>Syzygium cumini</i>	Jamun/ Jam	Eaten as fruit
<i>Zizyphus Jujuba</i>	Ber/Bair/Koer	Eaten as fruit

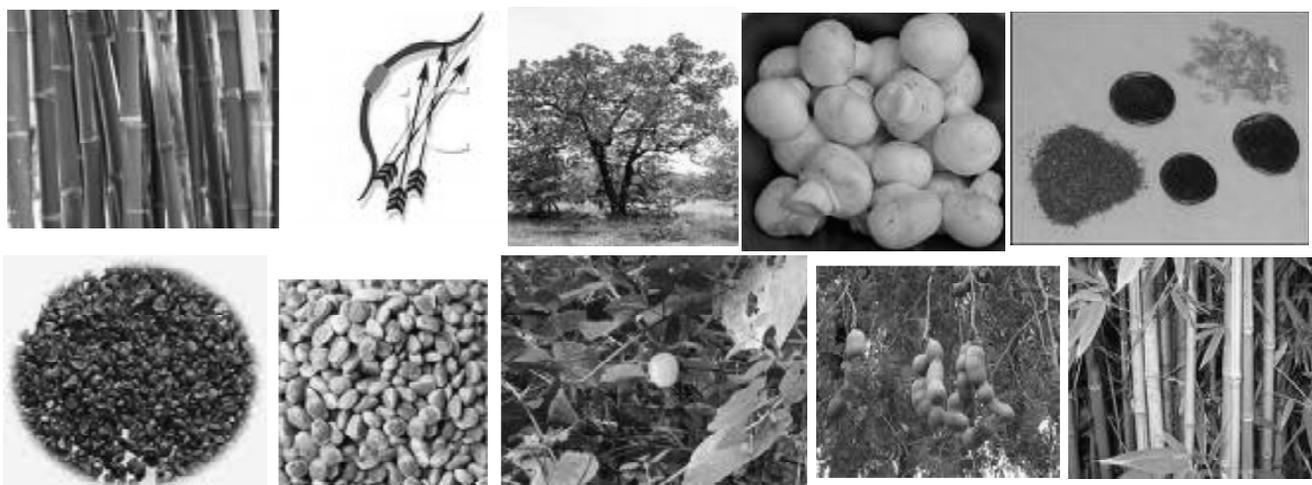
purposes. As construction material, making articles of daily use. Making the traditional bow and arrow. Young shoots (“Sandhan”) are used for preparing vegetables and pickles. The seeds are also edible.

- 3) Sal Seed (*Shorea robusta*) – Are edible.
- 4) Broom Grass (*Thysanolaena maxima*) – Panicles are used for making soft brooms.
- 5) Tamarind (*Tamarindus indica*) – Used in curries and for making beverage.
- 6) Chironji (*Buchanania latifolia*) – Seeds are edible, used for making sweets and has medicinal value.
- 7) Nux Vomica (*Strychnos nux – vomica*) – Medicinal value.
- 8) Palas/Dhak (*Butea monopherma*) – Flowers (State Flower of Jharkhand) used for making organe red dye. Juice is used as astringent.
- 9) Honey
- 10) Lac – Resinous substance used to make varnish.
- 11) Mushrooms (“*Khukri*”) – Eaten cooked as vegetable.

- 12) Mahua / Kachra (*Madhuka indica*) – Flowers stored and used as vegetable and has medicinal value. Seed is used to prepare liquor and also fed to cattle as a tonic.
13. Kachari / Gurmi (*Cucumis melo L.*) – Collected from crop fields and forests. Fruits eaten raw and has medicinal value.

However many tribal communities are changing their livelihood with the advent of more infrastructure, mining and other activities. In this race to catch up with the rest of “modern communities”, they are forgetting their traditional knowledge of sustainable use of natural resources. Even those who still practice their traditional occupation of farming are replacing the local cultivars (specially the minor millets like Madua, Cheena, Kado, Gundli etc) with genetically improved varieties (specially of rice), thus promoting mono cropping. This trend can pose a serious threat to biodiversity conservation.

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Women with their respect and sense of tradition and culture can play an important role here. There is a real danger of losing important agricultural knowledge by failing to pay attention to tribal women farmers practices. Therefore it is necessary to

- Recognize the value of tribal women farmers knowledge and skills.
- Revive the time tested local agricultural practices.
- Establish link between tribal women farmers and agriculture research institutions.

Involving women in decision – making in agricultural biodiversity conservation strategies.

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