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Extent of participation of tribal women in *In situ* on-farm conservation and *Ex situ* conservation measures of agrobiodiversity

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Abstract

Women play a central role in the conservation, management and use of bio-diversity on which life depends. Their contribution, however, is often overlooked. They are "invisible" partners from grassroots to policy level. If bio-diversity is to survive, women and men must play an equal part in its conservation and management. There is therefore an urgent need to understand gender role in conservation to promote and ensure the sustainable conservation and use of agro biodiversity now and in the future. The investigation was carried out in the Nilgiris district of Tamil Nadu State. The habitations namely Kunjappanai and Semmanarai were selected from two villages (Jakkanarai and Konavakarai respectively) of Kothagiri taluk of Nilgiris district. A sample of 120 respondents with 72 and 48 tribal women was selected from the identified two habitations following the proportionate and random sampling procedure. Data were collected with the help of a well constructed interview schedule and analysed with suitable statistical techniques. The extent of participation of tribal women in agrobiodiversity conservation is studied by analyzing the extent of participation of tribal women in two kinds of its measures viz., *In situ* On-farm and *Ex situ* Conservation. It has been noted that tribal women participated in almost all the activities like nursery preparation, field preparation, sowing/ transplanting, intercultural operation, harvesting, seed production, threshing/separating, winnowing, drying/cleaning and storing with their counterpart by performing all the three roles viz., self-doing, assisting and supervising at varying degrees. Thus, directly or indirectly and knowingly or unknowingly she has participated for the conservation and maintenance of agrobiodiversity in Nilgiris district.

Keywords: Tribal women, participation, *In situ* on-farm conservation, *Ex situ* conservation, agrobiodiversity

Introduction

Women play a central role in the conservation, management and use of bio-diversity on which life depends. If bio-diversity is to survive, women and men must play an equal part in its management. Women, particularly in hill areas, have greater responsibility for agriculture than ever before, resulting from a process termed the feminization of agriculture, in which women are increasingly responsible for agriculture. Women are traditional caretakers of genetic and species diversity in agriculture; men are more often concerned with converting these resources into cash. Although they possess knowledge about agrobiodiversity conservation, poor women are often left with no choice but to exploit natural resources in order to survive. There is therefore urgent need for studies on the gender dimension in bio-diversity conservation and management. The conservation of agrobiodiversity is the context of global food security assumes greater importance with specific reference to women.

India is in danger of losing its rich bio-diversity unless immediate and urgent steps are taken in the Western Ghats, the northeast region, the Jeypore tract of Orissa and coastal ecosystems. The voice of nascent women's groups in these bio-diversity-rich areas needs to be recognized and strengthened and their organizational units need to be extended, so that action to manage bio-diversity achieves short- and long-term success. Keeping this in mind, the present study was carried out to assess the extent of tribal women in *In situ* on-farm conservation and *Ex situ* conservation measures of agrobiodiversity in Nilgiris District of Tamil Nadu State.

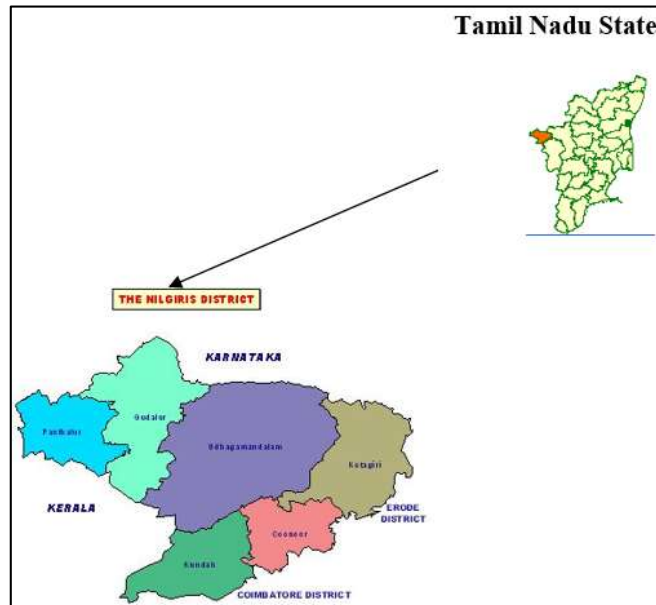
Research Methodology

The investigation was carried out in the Nilgiris district of Tamil Nadu State. The Nilgiri Biosphere Reserve located in Nilgiris, first of the fourteen biosphere reserves of India, established in September 1986.

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It is noteworthy that the NBR is the only Indian biosphere reserve that has been included in UNESCO's global network of biosphere reserves. The total area of the biosphere reserve is around 5520 sq.km, of which 1240 sq.km are the core zone, 3239 sq.km the manipulation zone (forestry) and it has around

335 sq.km the manipulation zone (agriculture) and 706 sq.km as restoration zone. The Nilgiri Biosphere Reserve was established to conserve *in situ* genetic diversity of species and restore degraded ecosystems to their natural conditions.



Map showing the study area

The NBR is the habitat of a number of tribal groups remarkable for their traditional modes of harmonious use of the environment. The habitations namely Kunjappanai and Semmanarai were selected from two villages (Jakkanarai and Konavakarai respectively) of Kothagiri taluk of Nilgiris district. A sample of 120 respondents with 72 and 48 tribal women was selected from the identified two habitations following the proportionate and random sampling procedure. Data were collected with the help of a well constructed interview schedule and analysed with suitable statistical techniques. The salient findings of the study are as follows.

Findings And Discussion

Agrobiodiversity conservation can be achieved by adopting two conservation measures *viz.*, *in situ* on-farm conservation and *ex situ* conservation. The extent of participation of tribal women in agrobiodiversity conservation is studied by analyzing the extent of participation of tribal women in two kinds of its measures *viz.*, *In situ* On-farm and *Ex situ* Conservation.

1. Extent of participation of tribal women in *in situ* on-farm conservation

In contrast to *ex situ* conservation, *In situ* on-farm conservation of genetic resources through cultivation and use in farms or gardens offers the advantage of further development for instance through targeted selection and resowing and thus evolutionary adaptation.

The participation of tribal women in *in situ* on-farm conservation was assessed under the five major aspects such as Nursery preparation, Field preparation, Sowing activities, Inter cultivation and Harvesting.

The extent of participation of the respondents was assessed as self-doing, assisting, supervising and non-participation by assigning scores of 3, 2, 1 and 0 respectively. Under each major aspect, various activities pertaining to it were included. The aspect wise participation of tribal women in *in situ* on-farm conservation is presented below.

1.1 Extent of participation of tribal women in nursery preparation

The extent of participation in six activities under nursery preparation is presented below in Table 1 (Fig. 1).

Table 1: Participation of tribal women in nursery preparation (n=120)

Activities	Self doing		Assisting		Supervising		Non-participation	
	No.	%	No.	%	No.	%	No.	%
Formation of raised bed	-	-	-	-	-	-	120	100.00
Application of FYM and GLM (Green leaf manure)	12	10.00	31	25.83	8	6.66	69	57.93
Broadcasting of sprouted seeds	100	83.33	8	6.67	12	10.00	-	-
Weeding	94	78.34	10	8.33	13	10.83	3	2.50
Water spraying	103	85.83	17	14.16	-	-	-	-

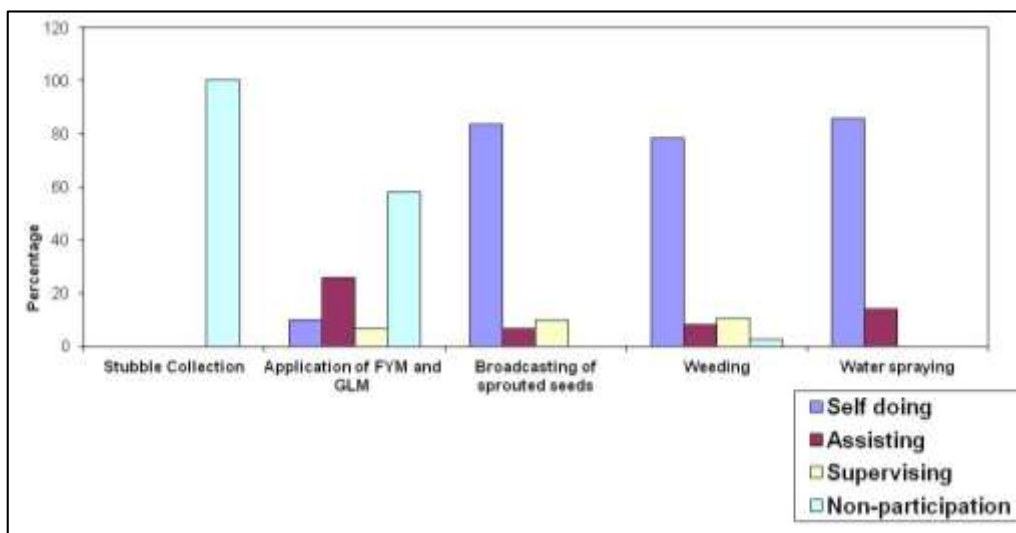


Fig 1: Participation of tribal women in nursery preparation

It can be argued from the table that cent per cent of the respondents did not participate in formation of raised bed. It might be due to the fact that formation of raised bed with fully men-oriented job, which requires more physical strength.

Tribal women had a lower percentage of participation (6.66%) by supervising application of Farm yard manure (FYM) and Green Leaf Manure (GLM), 10.00 per cent participation in self-doing and 25.83 per cent in assisting. A little more than half (57.50%) of the tribal women did not participate in application of FYM. It requires more physical strength to carry and distribute FYM and GLM to the nursery field from the place where it is available and it is men-oriented job. This might be the reason for non-participation of 57.50 per cent of tribal women in the application of FYM and GLM in nursery preparation. In broadcasting of sprouted seeds, cent per cent of the respondents participated either as self-doing, assisting or supervising. Majority (83.33%) of the respondents performed self-doing followed by 10.00 and 6.67 per cent of tribal women performed supervisory and assistance work in broadcasting of sprouted seeds respectively. All the tribal women participated in dusting fresh wood ash. Self-doing, supervising and assisting in the dusting of fresh wood ash were noticed by 79.17, 12.50 and 8.33 per cent of the respondents respectively. A little more than two-third (79.17%) of the respondents participated by self-doing in weeding followed by 10.83 per cent of tribal women who supervised in the same activity whereas 8.33 per cent of the respondents performed assistance work. Tribal

women had a meagre percentage (2.50%) of non-participation in weeding. This might be due to their reduced physical strength as a result of old age. Self-doing and assistance in water spraying were noticed among 85.83 per cent and 14.16 per cent of the respondents respectively.

From the Table 1 it could be inferred that the tribal women participated in the four activities (except formation of raised bed) performing all the three roles *viz.*, self-doing, assisting and supervising at varying degrees, mainly they participated in labour intensive activities. But in the case of formation of raised bed the tribal women are not traditionally allowed to do that work. Moreover, it is felt that are not physically fit (physical strength involve) for handling plough. Therefore, none of the respondent participated in raised bed formation. This finding is in line with the research finding of Chakrabarty (1997) [1]. He indicated that ploughing was the monopoly of men in wet cultivation.

1.2 Extent of participation of tribal women in field preparation

Under field preparation, the extent of participation was found by the sub-items *viz.*, stubble collection, ploughing (forking) the field, clod breaking and levelling, forming ridges and furrows, forming drainage channel, basal application of FYM and basal application of fertilizer. The details on the extent of participation in the above items are presented in Table 2 (Fig. 2).

Table 2: Participation of tribal women in field preparation (n=120)

Activities	Self doing		Assisting		Supervising		Non-participation	
	No.	%	No.	%	No.	%	No.	%
Stubble collection	96	80.00	12	10.00	12	10.00	0	0.00
Ploughing the field (forking)	-	-	-	-	-	-	120	100.00
Clod breaking and leveling	87	72.50	21	17.50	12	10.00	0	0.00
Forming ridges and furrows	55	45.83	23	19.17	13	10.83	29	24.17
Forming drainage channel	46	38.33	20	16.67	15	12.50	39	32.50
Basal application of FYM	33	27.50	12	10.00	14	11.67	61	50.83
Basal application of fertilizer	-	-	15	12.50	23	10.83	92	76.67

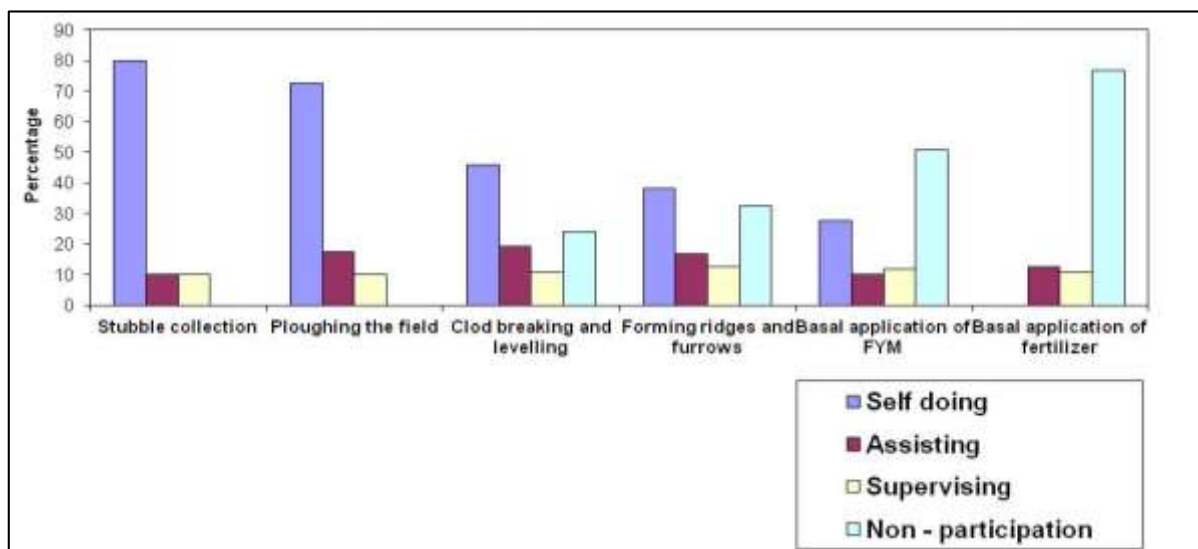


Fig 2: Participation of Tribal Women in Field Preparation

It could be observed from the Table 2 that tribal women had a higher percentage of participation (80.00%) by self doing in stubble collection and each 10.00 per cent of the respondents assisting and supervising the persons involved in this actively. In ploughing (forking) activity, cent per cent of the respondents did not participate. It might be due to the fact that it was fully men-oriented job. A little less than three-fourth (72.50%) of the tribal women were engaged as self-doers in clod breaking and levelling. It might be due to the fact that it was fully women oriented job. Assisting and supervising in clod breaking and levelling. It might be due to the fact that it was fully women oriented job. Assisting and supervising in clod breaking and levelling were noticed by 17.50 and 10.00 per cent of the respondents respectively. Nearly half (45.83%) of the respondents involved in forming ridges and furrows themselves followed by 17.50 and 10.00 per cent of the respondents performed assisting and supervising work respectively. Regarding the formation of drainage channel the tribal women were found to involve by performing all the three roles of self-doing, assisting and supervising and their percentage being 38.33, 16.67 and 12.50 respectively. Nearly one-third (32.50%) of the respondents did not participate. This might be due to the fact that 35.00 per cent of the respondents were old aged people, who would not have physical strength to participate in this activity and women's drudgery increased in this activity. In basal application of FYM, self-doing, supervising and assisting were expressed by 27.50, 11.67 and 10.00 per cent of the tribal women respectively. About half (50.83%) of the respondents reported non-participation in basal application of FYM. In basal application of fertilizer, assisting and supervising were expressed by 12.50 and 10.83 per cent of the tribal women respectively. Non-participation in basal application of fertilizer was reported by three-fourth (76.67%) of the respondents.

From a look at the data in Table 2, it could be seen that tribal women participated in the four activities (except ploughing (forking) the field) performed all the three roles viz., self-

doing, assisting and supervising at varying degrees. In the case of ploughing (forking) the field the tribal women are not involved as it requires more physical strength and involves more drudgery because of non-availability of women friendly equipments. Hence, none of the respondents participated in ploughing the field activity. In the application of basal fertiliser, technical knowledge and skill is required for admixture and application of various fertilisers, so non-participation was found in self-doing and assisting in the same activity. Though the activities like formation of ridges and furrows, formation of drainage channel and basal application of FYM requires more physical strength to handle farm equipments and farm inputs, 45.83, 38.33 and 27.50 per cent of the tribal women were engaged as self-doers in the above mentioned activities respectively because half of the respondents were young in age and having physical strength to engage and their annual income is very low which prevent them to engage paid labours.

This finding is in line with the findings of Bhuyan and Tripathy (1988) [2]. They observed that in tribal areas, women worked with men in sowing, application of fertilisers and pesticides. The tribal women were taking the arduous work of cultivation in contrast to the women in plain or coast. They shared with men in all operations except in land preparation and irrigation.

This finding is also in line with the findings of Jamatia (1999) [3]. She found that the tribal women were found to participate in the activities like stubble collection, forming ridges and furrows, forming drainage and application of FYM, connected to main field preparation in various degrees self doing, assisting and supervising.

1.3 Extent of participation of tribal women in sowing / transplanting activities

Under this aspect, seed treatment and sowing or transplanting were the two activities taken into account to assess the extent of participation. The details are presented in Table 3.

Table 3: Participation of tribal women in sowing activities (n=120)

Activities	Self doing		Assisting		Supervising		Non-participation	
	No.	%	No.	%	No.	%	No.	%
Seed treatment	20	16.67	88	73.33	12	10.00	-	-
Sowing / transplanting	98	81.67	10	8.33	12	10.00	-	-

The above Table 3 reveals that nearly three-fourth (73.33%) of the respondents reported assistance in seed treatment followed by 16.67 and 10.00 per cent of the respondents reported to take part as self-doers and supervisor respectively. To the sowing or transplanting activity, 81.67 per cent of the tribal women reported self-doing, 10.00 per cent supervising the persons involved in this activity and 8.33 per cent assisting the activity.

It can be summed up that majority (73.33%) of the tribal women reported assistance in seed treatment as it was a knowledge and skill oriented activity. The tribal women participated in the two activities (seed treatment and sowing or transplanting) performing all the three roles *viz.*, self-doing, assisting and supervising of varying degrees, mainly they participated in less drudgery activities. It could be observed that the tribal women more involved in the sowing / transplanting activities as self-doers rather than supervising and assisting the activity. This might be due to the fact that sowing or transplanting operation is purely manual and does not involve tools and implements. The tribal women were

traditionally involved in this activity and it was fully women-oriented job. So participation of women was found to be higher.

This finding is in accordance with the findings of Singh and Sharma (1988) [4]. They stated that hill women were mostly involved in repetitive and monotonous operation like transplanting, harvesting and threshing. They also found that 58.38 per cent of the farms were managed by men, 16.59 per cent were managed by women and 24.88 per cent were jointly managed.

1.4 Extent of participation of tribal women in intercultivation

The extent of participation of tribal women in intercultivation operations was analyzed with seven activities, hoeing and weeding, earthing up and gap filling, thinning, stirring of soil, pruning and tying, watering, plant protection measures and top dressing of fertilizer. The details are presented in Table 4 (Fig. 3).

Table 4: Participation of tribal women in intercultivation activities (n=120)

Activities	Self doing		Assisting		Supervising		Non-participation	
	No.	%	No.	%	No.	%	No.	%
Hoeing and weeding	95	79.17	10	8.33	13	10.83	2	1.67
Earthing up and gap filling	83	69.17	22	18.33	13	10.83	2	1.67
Stirring of soil	100	83.33	7	5.84	13	10.83	-	-
Thinning	91	85.83	16	13.34	13	10.83	-	-
Pruning + tying	-	-	-	-	-	-	120	100.00
Watering	28	23.33	47	39.16	6	5.00	42	35.00
Plant protection measure	2	1.67	18	15.00	12	10.00	100	13.33
Top dressing of fertilizer	-	-	13	10.83	16	5.00	101	84.17

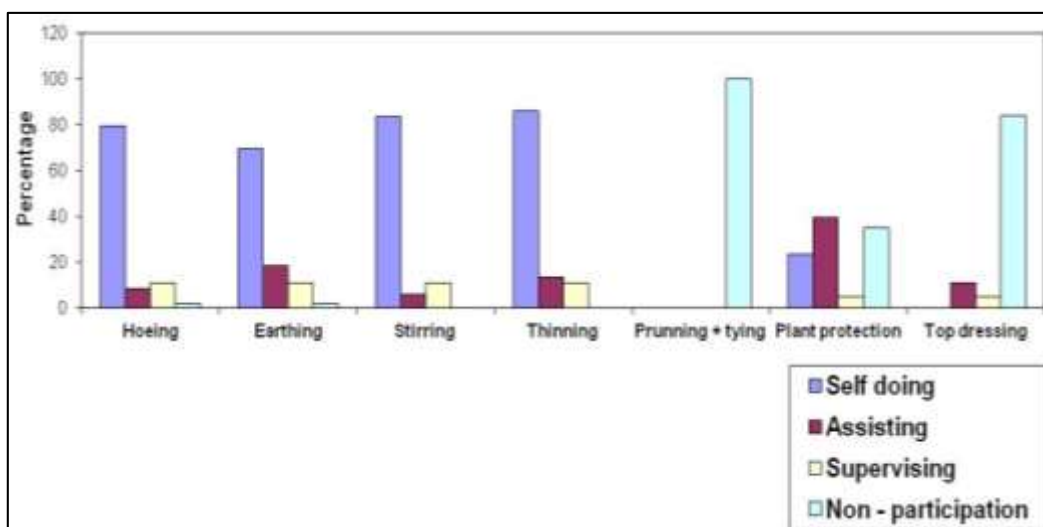


Fig 3: Participation of tribal Women in intercultivation activities

It could be evident from the Table 4 that more than three-fourth (79.17%) of the tribal women were engaged as self-doers and 8.33 per cent reported assistance in hoeing and weeding activity. Self-doing also reported by 69.17, 83.33 and 75.83 per cent of the respondents in earthing up and gap filling, thinning and stirring of soil respectively. Whereas 18.33, 5.84 and 13.34 per cent of the respondents performed assistance work in the aforesaid intercultivation operations. Each 10.83 per cent of the tribal women expressed supervisory work in the same activity. Meager percentage (each 1.67%) of the respondents did not participate in hoeing and weeding, earthing up and gap filling activity. In pruning and tying activity, cent per cent of the respondents did not

participate. A little more than one-third (39.16%) of the respondents reported assisting the irrigation operation followed by 23.33 and 5.00 per cent of the respondents reported self-doing and supervising, whereas 35.00 per cent of the tribal women did not participate in this activity. Non-participation on plant protection measures and top dressing of fertilizer was reported by 83.33 and 84.17 per cent of the respondents respectively. In plant protection measures, self-doing, assisting and supervising were expressed by 2.00, 15.00 and 10.00 per cent of the tribal women respectively. None of the tribal women were engaged as self-doers in top dressing of fertiliser.

It can be inferred that the activities like weeding, gap filling,

thinning, pruning, tying and stirring of soil were mainly done by women and women oriented job. The above mentioned intercultivation operations requires very careful watching, picking, replacing and removing for which women have to bend over the crops for hours for days together. It is done mainly by women because patience is more in women than in men and no need to operate any tools / equipments. Again, their participation was very low in watering, plant protection measures and top dressing because of requirement of more technical knowledge and physical strength, complex nature of the activities and complex nature of the topography due to which tribal women found it difficult to perform. This finding is derives support from Manjula (1991) [5]. She found that tribal farm women participated in all the activities

viz., forking, clod breaking, formation of ridges and furrows, formation of drainage channel and application of FYM, connected to main field preparation and also the weeding, harvesting except marketing.

The Onge women also participated in some agricultural activities on coconut plantation, weeding and collection of nuts as revealed by Kumar (1998) [6].

1.5 Extent of participation of tribal women in harvesting

Under harvesting, reaping the crops, bundling and transporting to threshing yard were the three activities the extent of participation was assessed. The details are presented below in Table 5 (Fig. 4).

Table 5: Participation of tribal women in harvesting activities (n=120)

Activities	Self doing		Assisting		Supervising		Non-participation	
	No.	%	No.	%	No.	%	No.	%
Reaping the crops	102	85.00	6	5.00	12	10.00	-	-
Bundling the crops	102	85.00	6	5.00	12	10.00	-	-
Transporting to the threshing yard	90	75.00	12	10.00	12	10.00	6	5.00

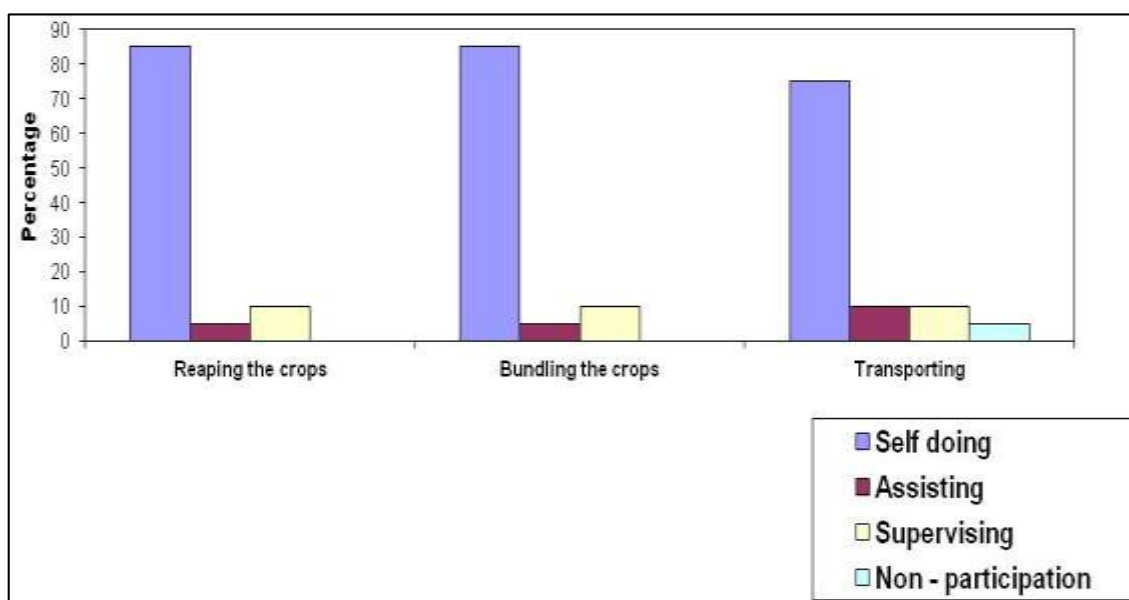


Fig 4: Participation of tribal women in harvesting activities

An equal percentage were found in the reaping and bundling activities as self-doers (85.00%), assisting (5.00%) and supervising (10.00%) by tribal women. Exactly three-fourth of tribal women (75.00%) were found to self-doers in transporting the crop to threshing yard. The reason for non-participation in transporting the crop to threshing yard by 5.00 per cent of tribal women might be due to their old age and reduced physical strength which prevent them to carry heavy weight. Thus it can be evidently concluded that majority of the tribal women predominantly take part in harvesting activities.

This finding is in line with the findings of Jamatia (1999) [3]. He found that majority of the tribal women had participated in the sowing, weeding, harvesting and post-harvest activities by self doing.

1.6. Overall extent of participation of tribal women in in situ on-farm conservation

The overall extent of participation of tribal women in in situ on -farm conservation is presented in Table 6.

Table 6: Overall extent of participation of tribal women in in situ on-farm conservation (n=120)

Sl. No.	Category	Number	Per cent
1.	Low	18	15.00
2.	Medium	69	57.50
3.	High	33	27.50
	Total	120	100.00

From Table 6 it could be observed that a little more than half (57.50%) of the respondents possessed medium level of participation followed by 27.50 and 15.00 per cent of the respondents possessed high and low level of participation in in situ on-farm conservation. It could be inferred from the table that 85.00 per cent of the respondents possessed medium to high level of participation in in situ on-farm conservation. This finding is supported by Srivastava (2008) [7]. He identified different role of women in biodiversity and food security. He mentioned that women perform multifarious role as: Woman the housewife, Woman the gatherer, Woman the gardener, Woman the herbalist, Woman the plant breeder and

seed custodian and Women and rights to plant genetic resources.

This result was also supported by Jagannathan (1985) [8] and he found that in hilly and tribal areas, women were only doing the entire farming and livestock management.

Chakrabarty (1997) [11] indicated that in sowing, uprooting the seedlings, transplantation, weeding, harvesting and threshing both tribal men and women were participating. But uprooting the seedlings, transplanting and weeding were predominantly done by women.

2. Extent of Participation of tribal women in *ex situ* conservation

Ex situ conservation means the conservation of components of biological diversity outside their natural habitats.

The extent of participation under *ex situ* conservation is assessed by analyzing the participation in six activities which facilitates *ex situ* conservation of agrobiodiversity such as seed production, threshing / separating, winnowing, drying and cleaning, storing and Seed exchange with neighbours / other community.

The extent of participation under *ex situ* conservation is presented in Table 7 (Fig. 5). From the more than four-fifth of the tibal women (81.67%) expressed self-doing and 10.00 and 8.33 per cent reported supervisory and assistance work in the seed production. The participation of tribal women by self-doing, supervising and assisting was reported to be 88.33, 8.33 and 3.34 per cent respectively in threshing / separating activity.

Table 7: Participation of tribal women in *ex situ* conservation (n=120)

Activities	Self doing		Assisting		Supervising		Non-participation	
	No.	%	No.	%	No.	%	No.	%
Seed production	98	81.67	10	8.33	12	10.00	-	-
Threshing / separating	106	88.33	4	3.34	10	8.33	-	-
Winnowing	85	70.83	25	20.83	10	8.34	-	-
Drying and cleaning	109	90.83	8	6.67	3	2.50	-	-
Storing	109	90.83	8	6.67	3	2.50	-	-
Seed exchange with neighbours / other community	57	47.50	-	-	-	-	63	52.50

Regarding the participation of tribal women in winnowing, 70.83 per cent in self-doing, 20.83 per cent in assisting and 8.34 per cent in supervising was noticed among tribal women. An equal percentage were found participating in the drying / cleaning and storing activities as self-doers (90.83%), assisting (6.67%) and supervising (2.50%) by tribal women.

A little less than half (47.50%) of the respondents exchanged their stored seeds with neighbours and other tribal community who is in need and remaining 52.50 per cent of the respondents did not participate in seed exchange mechanism. Reason for non-participation in seed exchange might be due to non-availability of excess seed for sharing with others.

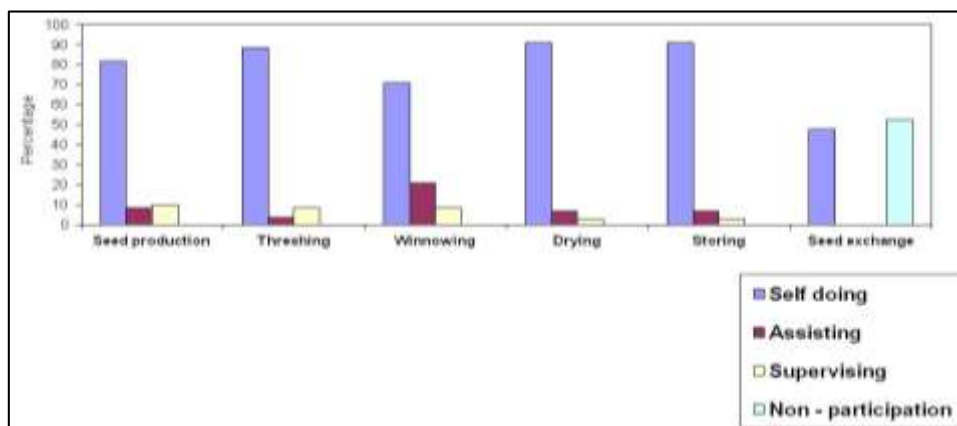


Fig 5: Participation of tribal women in *ex situ* conservation

It could be concluded from the finding that except seed exchange mechanism the participation of tribal women is found relatively high as self-doers but in case of seed exchange where large quantities of grains are needed to exchange with neighbours and other community, availability of seed stock determines extent of participation and in case of seed production, threshing / separating, winnowing, drying/ cleaning and storing which depends on human labour, to complete these activities, they are predominantly performed by women.

2.1. Overall extent of participation of tribal women in *ex situ* conservation

It could be observed from the Table 8 that three-fourth

(74.17%) of the respondents possessed high level of participation followed by 14.17 per cent of the respondents possessed medium level of participation in *ex situ* conservation. Only 11.66 per cent of the respondents had low level of participation in *ex situ* conservation.

Table 8: Overall extent of participation of tribal women in *ex situ* conservation (n=120)

Sl. No.	Category	Number	Per cent
1.	Low	14	11.66
2.	Medium	17	14.17
3.	High	89	74.17
	Total	120	100.00



Photograph 1: Tribal women engaged in clod breaking and leveling



Photograph 2: Tribal women engaged in water spraying



Photograph 3: Tribal women engaged in harvesting coffee fruits

3. Extent of participation of tribal women in agrobiodiversity conservation

The extent of participation of tribal women in agrobiodiversity conservation irrespective of its kind such as *in situ* on-farm and *ex situ* conservation is depicted in Table 9.

Table 9: Extent of participation of tribal women in agrobiodiversity conservation (n=120)

Sl. No.	Category	Number	Per cent
1.	Low	16	13.33
2.	Medium	43	35.83
3.	High	61	50.84
	Total	120	100.00

The Table 9 indicates that about half (50.84%) of the tribal women possessed high level of participation followed by 35.83 per cent of the respondents possessed medium level of participation in agrobiodiversity conservation. Only 13.33 per cent of the respondents had low level of participation in agrobiodiversity conservation.

This finding is in line with the findings of Patel and Sandagi (1995) [9]. They stated that majority of the farm women participated in harvesting (97.17%), planting (91.51%), weeding (88.68%), feeding the animal and poultry birds (88.19%), post harvest operation (74.47%), nursery raising and planting of vegetables (74.47%), livestock care (75.47%), preparation of FYM and compost (63.21%) winnowing (54.72%).

This result is also supported by Parvathi *et al.* (1996) [10]. She opined that majority of the women agricultural labourers were involved in transplanting (80%), transplanting and spreading of seedling (60%) in paddy, reaping the crop (98%) and bundling and transportation (94%).

Chakrabarty (1997) [11] indicated that while ploughing was the monopoly of men in wet cultivation, the tribal women's work load nearby no means less than their men. In sowing, uprooting the seedlings, transplantation, weeding, harvesting and threshing both tribal men and women were participating. But uprooting the seedlings, transplanting and weeding were predominantly done by women.

Conclusion

Regarding extent of participation of tribal women in *in situ* on-farm conservation, the tribal women participated in the four activities of nursery preparation *viz.*, broadcasting of sprouted seeds, dusting fresh wood ash, weeding and water spraying performing all the three roles *viz.*, self-doing, assisting and supervising at varying degrees. Majority of the tribal women reported assistance in seed treatment and involved in the sowing / transplanting activities as self-doers. The activities like weeding, gap filling, thinning, pruning, tying, stirring of soil and all activities related harvesting were mainly done by women. Though the activities like formation of ridges and furrows, formation of drainage channel and basal application of FYM requires more physical strength, 45.83, 38.33 and 27.50 per cent of the tribal women were engaged as self-doers in the above mentioned activities respectively.

Regarding extent of participation of tribal women in *ex situ* conservation, the participation of tribal women is found relatively high as self-doers in case of seed production, threshing/separating, winnowing, drying/cleaning and storing. It has been noted that tribal women participated in almost all the activities with their counterpart. Their role is highly significant for the food production and ensuring household food security. Thus, directly or indirectly and knowingly or unknowingly she has participated for the conservation and maintenance of agrobiodiversity in Nilgiris district.

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