Original Article
ISSN (Online): 2350-0530
ISSN (Print): 2394-3629

International Journal of Research - GRANTHAALAYAH
April 2025 13(4), 131–143

HILL AGRICULTURE AND ITS IMPACT ON TRIBAL ECONOMY IN TAMIL NADU

Teeka Raman M. [1], Dr. Sivasubramaniyan Krishnasamy [2]

[1] Research Scholar, Department of Economics, St. Peter's Institute of Higher Education and Research (Deemed to Be University) Avadi, Chennai-600 054, Tamil Nadu, India
[2] Professor, Department of Economics, St. Peter's Institute of Higher Education and Research (Deemed to Be University) Avadi, Chennai-600 054, Tamil Nadu, India

Received 13 March 2025
Accepted 09 April 2025
Published 08 May 2025

Corresponding Author
Teeka Raman M.,
Teekaram@protonmail.com

DOI
10.29121/granthaalayah.v13.i4.2025.6094

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

ABSTRACT

The agricultural eco system in hilly areas of Eastern Ghats of Tamil Nadu, which are dry, degraded and fragmented, suffers heavily due to population pressure, and impacted tribal economy. These hills are predominantly inhabited by 'Malayali' tribes, who share a common origin, culture and dialect. Agriculture is the mainstay of their livelihood and met their basic food requirements. The agricultural holdings in the hill villages of Eastern Ghats are classified as punjai – (dry land) as no sustainable subsurface irrigation system is in use across the hills. Forest resources, surrounding their habitats-secondary sources of income to the tribals – show a declining trend due to vigorous implementation of Forest Acts and Regulations. Hence, an analysis of traditional agricultural eco system practiced in Eastern Ghats, reveals, hills in the range are eco specific and differ between hills and plains. For instance, cultivation in hilly areas with its undulating terrain, slopes, rainfed nature of traditional crop, application of primitive technology and market inaccessibility differs wholly from plains. An emerging issue which adversely impacted their economy and livelihood is while the cultivable area or private holdings has remained constant over the years but the population pressure on them has been growing ata faster rate causing division of holdings and fragmentation due to the operation of traditional law of inheritance and ended up with uneconomic holdings. The purpose of this paper is to find out the causes for adverse tribal economy on the basis of the secondary data collected from census reports, department of Statistics and Economics, and Village Administrative Officers.

Keywords: Rainfed Lands, Fixed Landholdings, Traditional Law of Inheritance, Fragmentation and Uneconomic Holdings, Declining Productivity

1. INTRODUCTION

Tamil Nadu lies on the south-eastern coast of the Indian peninsula and is endowed with two large mountainous regions. One is, Eastern Ghats - a discontinuous mountain range running almost parallel to the east coast of India and the other is, Western Ghats running parallel to west coast of India. The Eastern Ghats of Tamil Nadu runs across eleven districts[1], getting different names of the hills.It is

[1] Districts of Vellore, Tirupathur, Tiruvannamalai, Dharmapuri, Salem, Namakkal, Erode, Kallakuruchi, Karur, Krishnagiri and Tiruchirappalli.

known as Jawadhu and Elagiri hills whenit passes through the districts of Vellore, Tirupathur, and Tiruvannamalai. In Dharmapuri district it is known as Sitheri hills.In Salam district, it gets the name as Arunuthumalai, Yercaud hills, Pachamali and Kalrayan hills. In Namakkal it iscalled as Kollimalai. In Thiruchirappalliit is Pachamali. The tribal population in the State is 7.65 lakhs (2011 census) and constitutes 1.1 per cent of the total population of the state. Recently, one more community namely 'Narikuravas' is newly included[2]in the notified list of Scheduled Tribes of the State, increasing the total tribal communities to 37. Of these, six tribal communities – Toda, Kota, Kurumbas, Kaatunayakan, Paniyan and Irular –have been declared as Particularly Vulnerable Tribal Communities (PVTGs). The distribution pattern of tribal population in the State shows, they have less concentration in Coastal and Delta districts and high concentration (62.47%) in western and northern districts which are criss-cross by the two mountainous ranges. In Tamil Nadu, about 83.1% of the tribal population resides in hill areas. However, in census, it is classifiedas 'rural'.

2. TRIBES AND FORESTS IN THE JAWADHU HILLS IN VELLORE DISTRICT

Forests and tribes are culturally welded together since time immemorial. The forest ecology of their habitats naturally shaped their living conditions and economic pursuits. They depend upon forests for food and shelter besides varieties of minor forest produce like tamarind, soap nut, fruits, grasses etc supplemented their income. The implementation of statutory regulations like Forest Act of 1865 and 1878, Forest Policy Resolution 1894, and Forest Act, 1927 had monopolized forest resources in the name of conservation of the forests. The outcome of these regulations is 'customary rights' of the tribals and 'common property' resources in the hill areas were reduced to 'concessions' and 'state property', restricting hassle free access to forest resources. The formulation of National Forest Policy, 1952, not only towards the line of the British policy but also forfeited some of the privileges enjoyed by the tribals even under British administration. The forest department under British rule had abolished '***punam'*** cultivation familiarly known as 'shifting cultivation' prevalent widely among these hill tribes.

This restriction had evoked strong resentment[3] and opposition from the Malayali tribes of the Jawadhu hills. By way of rapprochement, the British Government had implemented "Forest Village System"[4]which had extended a few concessions in favour of tribes living in Jawadhu hills. The concessions include, free grazing inside the reserve and un-reserve forests. They were permitted free of charges to use timber and fuel of unclassified species, bamboos and thatch grass from the forest blocks allotted to each village or group of villages for their domestic and agricultural requirements. However, these concessions were subject to certain conditions. Crucial conditions include: rearing goats should be stopped, and tribes should safeguard the allotted grazing blocks including the sandal trees growing therein. They should attend works relating to forest department as laborers on payment and village heads like 'Ur Goundan" or "Nattan" to deposit money for grazing animals on the basis of quantum of cows and sheep in their villages. These changes and restrictions have put problems on the hassle-free use of forest resources and driven away the sons of the soil to economic backwardness.

[2] G.O.MS.No. 38, Adi Dravidar and Tribal Welfare Department, Chennai-9
[3] "Para 2.69 of Section 3, PART-I of the Working Plan document of Vellore Forest Division
[4] G.O.Ms.No.2687, Revenue, dated 13-12-1915. 1-1-Section-9: Working plan document of Vellore Forest Division

3. VILLAGES TAKEN UP FOR STUDY

The factors relating to the issue are examined on the basis of secondary data in respect of 8 census villages located at the plateau portion of the Jawadhu hills at Anicut Block of Vellore district. The names of the tribal hill villages are: (i) Alleri, (ii) Elluparai, (iii) Mulluvadi, (iv) Peenjamandai, (v) periya- pannaparai, (vi) Pudukuppam, (vii) Jardhankollaiand (viii) Pelampattu. Among these eight villages, tribals are dominated with 100%in four Villages (Peenjamandai, Periyapannapaarai, and Pudukuppam) and the rest with 99%. The village land record shows that all private lands are classified as Punjai (dry lands or rainfed). Despite the fact that these villages are on the plateau part of the top hills, not a single hectare of 'forest' type found in these hills and the percentage of private lands to the total geographical area of the villages ranges from 76% to 92%. This issue may further be examined dealing with land use pattern of these villages Table 1.

Table 1 **(Area in hectares)**

Table 1 Land Use Classification and Percentage of Population in Each Study Village

Sr. No.	Classification of land (areain ha)	Alleri	Elluparai	Mulluvadi	Peenjamandai	Periyapanna parai	Pudhu kuppam	Jardan kollai	Pelam pattu
1	Nansai (wet land)	0	0	0	0	0	0	0	0
2	Punjai (dry land)	165.30	26.26	110.69	1189.05	62.23	58.22	507.25	308.60
3	Revenue (Assessed)	16.04	2.12	3.79	236.43	16.87	0	29.23	28.85
4	Revenue (un-assessed)	1.11	0	0	0	0	0	17.27	18.82
5	Forest	0	0	0	0	0	0	0	0
6	Grazing land	0	0	0	0	0	0	0	0
7	Others	2.37	0.16	6.82	57.52	2.76	9.06	17.27	18.82
8	Geographical area	184.81	28.54	121.3	1482.1	81.85	67.28	553.74	356.26
9	% of private land to total land	89.44	92.01	91.25	80.22	76.02	86.53	91.60	86.62
10	Total Population	1253	170	696	4557	301	163	2098	2361
11	ST population	1243	169	688	4557	301	163	2093	2330
12	ST population (%)	99	99	99	100	100	100	100	99

Source: Compiled from Census of India 2011 & Department of Economics and Statistics, Tamil Nadu, 2022-23.

4. LAND USE PATTERN

A study of land use pattern in these sample villages show how lands are put in use. It gives a fair idea of the natural endowments owned by these villages. Table 2 gives the position:

Table 2 **(area in hectare)**

Table 2 Land Use Pattern in the Study Area

Sr. No.	Classification	Allery	Ellu parai	Mullu vadi	Peenja mandai	Periyapanna parai	Pudhu kuppam	Jardan kollai	Pelam Pattu	Total
1	2	3	4	5	6	7	8	9	10	11
a	Forest	0	0	0	0	0	0	0	0	0
b	Uncultivable Waste	17.70	0	57.35	112.58	16.87	28.56	42.05	97.87	372.98
c	Non Agri Uses	2.37	0		0	0		0	0	2.37
	Building	1.11	0	6.58	1.15	0	2.69	4.45	9.14	25.12
	Roads	0	0	0	0	0	0	8.68	0.49	9.17
	Railway Lines	0	0	0	0	0	0	0	0	0

	Rivers	0	0	0	0	0	0	0	0	0
	Canals	0		0	0	0	0	0	0	0
	Check Dams	0	0	0	4.31	0	0	0	0	4.31
	Swamp Area	0	0	0	0	0	0	0	0	0
	Social Forest	0	0	2.79	0	0	0	0	6.67	9.46
	Others	0	0	0.99	0	0	0	0	16.29	17.28
	SUB TOTAL	3.48	0	10.36	5.46	0	2.69	13.13	32.6	67.71
d	Cultivable Waste Land	0	0	0	0	0	0	0	0	0
e	Permanent Pasture & Grass Land	0	0	0	0	0	0	0	0	0
f	Misc. Tree Crops & Groves	0	0	0	0	0	0	0	0	0
g	Current Fallow	60.25	9.37	13.38	839.87	23.23	1.25	245.16	104.26	1296.77
h	Other Fallow	0	0	0	54.12	0	0	0	0	54.12
i	Net Cultivated Area	121.08	19.17	40.21	470.07	39.7	34.79	253.41	137.84	1116.27
	Total	184.81	28.54	121.30	1482.10	81.85	67.29.	553.74	356.26	2875.89

Source: Directorate of Economics and Statistics, Tamil Nadu 2022-23

The percentage of 'uncultivable waste', - a type of land that is difficult or costly to cultivate which comprises of barren rock and undulated terrain alone accounts for 12.96. Similarly, lands used for 'non- agricultural purposes' like roads, buildings, streams, rivers, check dams etc. represents 1.29%. Hardly, less than 2% of the total geographical area clearly indicates how poor the natural endowment and infrastructure development in these villages. Adding fuel to the fire, these villages do not have, lands categorized as (i) cultivable waste, (ii) Permanent pasture and grass lands and (iii) Miscellaneous tree crops and grooves. It implies, there is no scope for bringing any additional areas for cultivation. Fortunately, the area classified as 'other fallow' –a type of land which has remained uncultivated for more than 5 years – is hardly 1.88% and that too found only in Peenjamandai village. Absence of this type of land shows the tribal's keen interest and commitment to bring all cultivable lands for raising crops when there is sufficient rainfall. Obviously, the land area classified as 'other fallow' in Peenjamandai village perhaps either, due to a high mound or highly undulated terrain not fit for crop cultivation. Other fallow lands accounts for 45% of the total geographical area of these villages; this is, perhaps, due to erratic or low level of precipitation during the year of recording.

5. IRRIGATED AND UNIRRIGATED AREA: BY CROPS

The agricultural lands in the study area are rainfed, however, sources of irrigation wherever available, like stream water, dug wells, tribal farmers make use of them for raising food crops like sugarcane, banana, paddy Table 3. The number of wells in each village is very few and mostly dug manually with a depth ranging from 20 to 25 feet (6 to 7.5m). In such wells, water is lifted manually with the help of cattle. However, a few farmers with means have installed diesel pump sets to bailout water for irrigation. Table 3 gives the information:

Table 3 **(area in hectare)**

Table 3 Irrigated and Unirrigated Area by Crops

Sr. no.	Classification	Allery	Ellu parai	Mullu vadi	Peenja mandai	Periya pannaparai	Pudhu kuppam	Jardan kollai	Pelam Pattu
1	2	3	4	5	6	7	8	9	10
A	Irrigated Crops								
1	Total of Non - Food Crops	0	0	0	0	0	0	0	0
	Total of Food Crops	7.40	0	15.47	20.16	4.46	2.90	29.37	28.70
	Total	7.40	0	15.47	20.16	4.46	2.90	29.37	28.70
	Percentage of irrigated area	4.47	0	13.97	1.69	7.15	4.97	5.79	9.30
	Net Area Cultivated	3.40	0	7.31	7.13	4.46	2.90	18.47	19.35
	Area Cultivated more than once	4.00	0	8.16	13.04	0	0	10.90	9.36
B	Unirrigated Crops								
	Total of Non - Food Crops	20.79	1.12	6.44	15.44	5.32	5.43	17.61	12.87
	Total of Food Crops	90.38	18.05	66.22	473.72	29.93	31.48	240.44	122.93
	Total of Food & Non-Food Crops	111.17	19.17	72.66	489.15	35.25	36.90	258.04	135.79
	Percentage of un-irrigated area	67.25	73	59.89	41.13	56.64	63.37	50.87	44.00
	Net Area Cultivated	99.97	19.17	32.90	463.85	35.24	31.90	34.94	118.49
	Area Cultivated more than once	11.20	0.00	39.76	25.30	0	5.00	23.10	7.30

Source: Directorate of Economics and Statistics, Tamil Nadu, 2022-23.

The percentage of irrigated crops in each of these villages is less than ten except Mulluvadi (13.97%). The area irrigated is very small compared to the total extent of available private land. So, tribal farmers' income becomes less. Lack of assured irrigation sources poses a challenge for crop failure due to erratic rainfall. Similarly, the area cultivated once under irrigated conditions in all these villages is awfully low even below 5% of the total cultivatable area that shows lack of assured irrigation. On the contrary, crop cultivation under un-irrigated condition is dominant. But the problem of rainfed agriculture confines to rainy seasons and the choice of crops are suitable and strong enough to withstand the vagaries of monsoon. Hence, millets like samai, ragi and horsegram, groundnut are dominant crops raised under unirrigated conditions. The highest percentage of unirrigated crops is registered in Elluparai Village, which has the lowest private land (26.26 ha) among the 8 villages. The percentage of unirrigated area is better in Alleri (67.25%), and Pudukuppam. (63.37%). It may be observed that among these villages, Peenjamandai has the largest private land (1189.05 ha) but it accounts for the lowest percentage of un-irrigated area (41.13). More than 50% of the agricultural lands remained uncultivated, i.e., 56.63% land as 'current fallow'.

6. OWNERSHIP OF PRIVATE LANDS: BY HILL VILLAGES

The agricultural lands in the hill villages are governed by ryotwari system right from the Britishers' rule. Standing Orders 28 (1) of the Board of Revenue, -Volume-I, (1858)[5], stipulates, "the individual registered as the owner of ryotwari holding is, as regards Government, the responsible proprietor of the ryotwari lands registered in his name in the Land Register of the District until they pass from his possession sale for arrears or in some other legal manner." According to [6]BSO-28(2), a

[5] "Standing orders of the Board of Revenue (Land Revenue, Settlement and Miscellaneous) 2006, Vol-I-Published by Account Test Centre (Law Books Division), Madurai, page No 246.
[6] - Ibid.

registered holder may alienate, sublet mortgage, sell, give, bequeath or otherwise dispose of the whole or any portion of his holding provided always-(1) that unless and until such transfer or disposal is registered in the land Register of the district, the registered holder remains liable for the assessment and all other legal charge dues on the land, just as if no such transfer or disposal had occurred, and (2) that, when the transfer is registered, the transferee takes the land subject to payment of any arrears of assessment or other legal charges due on it, and to the same obligations and conditions, special or general , as the transferor held it on. Thus, the ownership of agricultural lands in these Villages, rely on patta issued by the revenue department at the level of Tahsildar. In welfare eco system, patta plays a crucial role for accessing the benefits flow from those welfare measures. The revenue department issues patta in two formats-one for individual owner indicating the extent of land owned by him at various survey numbers he possessed in the same village. The other is a 'joint' patta when the land parcel is owned by more than a single individual or stakeholder.

The problem with joint patta is though it gives the names of the stakeholders who are all the co-owners but it does not clearly specify the individual share –the size and the part of land parcel - each owner or stakeholder is specifically entitled to. [7]BSO No 27(4) deals with the entry of names in joint patta states that "the entry of names in a joint patta will be made without reference to the extent of land enjoyed by each holder." Table 4 shows the classification of pattas and extent of area covered by each type.

Table 4 **(Area in Ha)**

Table 4 Classification of Patta by Owners of Private Lands

Sr. No.	Village	Type of Patta: Number & Size				Total	
		Single (no)	Area (ha)	Joint (No)	Area (ha)	Number (no)	Area (ha)
1	Alleri	57	67.27	55	98.09	112	165.36
2	Elluparai	7	5.26	8	21.00	15	26.26
3	Mulluvadi	61	29.88	85	81.11	146	110.99
4	Peenjamandai	285	247.03	515	942.02	800	1189.05
5	Periyapannaparai	14	21.23	5	41.00	19	62.23
6	Pudukuppam	5	16.10	38	42.12	43	58.22
7	Jardhankollai	173	176.39	274	330.86	447	507.25
8	Pelampattu	184	95..99	256	213.12	440	309.10
	Total	786 (39%)	563.15 (23%)	1236 (61%)	1769.31 (73%)	2022	2428.45

Source: The village records of VAO's Office in charge of the respective villages, 2022-23.

The data disclose that overall percentage of single patta holders is 38.87 but hardly owned 23% of total private lands. In these villages, joint patta holders owned large tract of private lands whose number swells to 1236. They held about 72% of total private lands. The crucial issue is how many stake holders are listed out in 1236 joint pattas. Out of 8 villages, the largest track of private land exists only in Peenjamandai revenue village which has nearly half of total private lands and in the remaining seven villages the same is put together accounts for 51%. It is therefore,

[7] "Standing orders of the Board of Revenue (Land Revenue, Settlement and Miscellaneous) 2006, Vol-I-Published by Account Test Centre (Law Books Division), Madurai, page No 245.

reasonable to study the number of stakeholders covered under 515 joint patta holders recorded in that village. The stakeholders' information is traced out in the village records available at the office of the VAO concerned.

7. STAKEHOLDERS COVERED BY JOINT PATTAS: BY VILLAGE RECORDS

Discussions with a few tribal farmers who owned joint pattas have revealed that these joint pattas were issued to their fathers and forefathers in 1980s some 50 years ago containing information about the name of the owner(s) along with the names of stakeholders and total size of the lands with survey numbers wise. Under ryotwari system, Pattas were issued to the tribal farmers who were the tillers of the lands treating them as owners. It was also ascertained from them, other than pattas, they were not given any other record / document assigning the lands in their favor. As it is, patta is the only document showing the ownership rights of the tribal farmers' over the lands possessed and enjoyed by them ever since the British period. Lack of title deed over the property jointly owned by them, poses a challenge in getting an individual patta for the stakeholders or their legal heirs. This is a serious problem faced by the tribal farmers who are helpless and directionless to come out this vicious circle. The village records disclose that this village has about 435 survey numbers with a total geographical area of 1482.10 ha. Most of the survey numbers have sub-divisions where some of them are covered by single patta and rest by joint patta. Out of 435 survey numbers, it is proposed to examine in detail of the first to 111 survey numbers-roughly 25% of the total survey numbers in that village to find out the details of the subdivisions and the number of stakeholders. The position obtained is given in Table 5.

Table 5

Table 5 Number of Subdivisions and Stakeholders Covered by Joint Pattas

Survey No.	Sub-divisions	Joint Patta	Stakeholders	Total size of the area (Ha) covered in all Pattas
From -To	(No)	(Numbers)	(No)	
Jan-21	49	23	100	282.80
21 - 30	18	12	44	126.35
31 -47	39	18	64	202.00
48 -53	214	8	24	113.60
54 - 65	37	18	117	435.50
66 -73	309	14	184	259.95
74 - 86	86	15	56	343.95
87 -111	81	21	180	510.95
Total	833	129	769	227.51

Source: Compiled from the Village Record of Peenjamandai, 2024.

The Village records show that out of 111 survey numbers taken up for study revealed that they consists of 129 joint pattas involving 833 sub divisions and 769 stakeholders covering an area of 227.51 hectares.

8. TIME SERIES DATA: BY HOUSEHOLDS AND POPULATION

For analysis purpose, time series data on number of households with population for six decades are presented in the Table 6.

Patta is related to households as it is issued to a head of the family. Table 6 indicates the changes in the number of households over the past six decades beginning from 1961 to 2011. Due to pandemic impact, the census due for enumeration in 2021 gets postponed. Hence, analysis is made with the available data. Among the eight villages, highest percentage of household's change could be seen in Elluparai that is more than sixfold increase. The next highest percentage of change is observed in Mulluvadi and Periyapannaparai. In Peenjamandai, the highest geographical area village records an increase of 302%. The lowest percentage of change is registered in Pudukuppam census village (95%). The interesting aspect is although there is a high increase in the number of households with corresponding population increase, the quantum of private lands in these villages have remained constant. Not a single hectare has been added to the private lands from the year 1961. The crucial point for consideration is how the increase in the number of households between the 1961 and 2024 has impacted the share of the land holdings. The details are given in Table 7.

Table 6

Table 6 Time Series Data on Number of Households and Population

Census villages	Private lands (ha)	1961		1971		1981		1991		2001		2011		% of change to Hs
		Households(NO)	Population	Households(NO)	Population	Households(NO)	Population	Households(NO)	Population	Households(NO)	Population	Households(NO)	Population	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Alleri	165.36	90	472	82	426	1000	450	131	678	422	1703	312	1253	247
Elluparai	26.26	6	47	8	47	70	69	23	112	176	821	39	170	550
Mulluvadi	110.99	36	162	97	421	74000	374	120	531	175	742	169	696	369
Peenjamandai	1189.05	267	1410	37	1864	49000	2515	523	2486	508	1996	1074	4557	302
Periyapannaparai	62.23	16	81	373	111	360	160	51	201	175	708	75	301	369
Pudukuppam	58.22	19	102	22	100	25	128	29	112	203	912	37	163	95
Jardhankollai	507.25	173	806	174	991	1207	1207	350	1500	298	1126	534	2098	209
Pellampattu	309.10	133	710	155	922	1187	1187	286	1388	453	2047	540	2361	306

Source: Compiled from census data, digital website, Director General of Census, New Delhi (Referred in March 2025)

Table 7 **(Land area in Ha)**

Table 7 Distribution of Landholdings, 1961 and 2024

Sr. No.	Village	Position as on1961			Position as on 2024		
		Private Lands (ha)	House holds (No)	Average Size of landholdings per household(ha)	Private Lands (ha)	House holds (No)	Distribution of landholdings per Household(ha)
1	Alleri	165.36	90	1.83	165.36	361	0.46

2	Elluparai	26.26	6	4.37	26.26	47	0.56
3	Mulluvadi	110.99	36	3.08	110.99	194	0.57
4	Peenjamandai	1189.05	267	4.45	1189.05	1135	1.05
5	Periyapannaparai	62.23	16	3.88	62.23	87	0.71
6	Pudukuppam	58.22	19	3.06	58.22	41	1.42
7	Jardhankollai	507.25	173	2.93	507.25	582	0.87
8	Pellampattu	309.10	133	2.32	309.10	555	0.56

Source: Census of India, 1961 and Compiled from the Village Records 2024-25.

The data indicate that in 1961, a household in a village had more than 1.83 hectares (Alleri). The highest average land holdings is seen in Peenjamandai (4.45 hectares). The average size of landholdings in other villages is between these two sizes. Similarly, in 2024, the average landholdings per household in Alleri accounts for 0.46 hectare. Interestingly, Peenjamandai, the village having the largest landholdings accounts for 1.05 hectares. Pudukuppam village registers 1.42 hectare per household.

In the study area, it may be observed that passing of the decades has brought down the land area originally possessed by a single owner or more than a single owner, into small pieces that is familiarly known as fragmentation. It implies, a single plot of land is divided into number of pieces depending upon number of legal heirs over generations due to operation of traditional inheritance. According to [8]Bentley (1987), "fragmentation is the process of breaking down something into fragments. Simply, farmland fragmentation is the process by which a single plot of farmland is divided into a great number of different pieces". Even at international level, this issue has been engaging attention since long. In an unpublished PhD thesis[9] of Wageningen University, "land fragmentation has been a prominent feature in many countries since the 17th century.

Within a little more six decades as on 2024, landholdings share per household gets reduced roughly to one third. The data clearly show that the number of households have been gradually increased putting pressure on the landholdings that reducing much less the share of the landholdings for a household. As far as the study area is concerned, it must be remembered that the tribals lacked title documents showing their ownership over the lands tilled and enjoyed by them time immemorial. The only title document is the patta issued by the revenue department. Single patta holders are in comparative advantage over the joint patta holders to get the welfare benefits. Lack of patta in the stakeholder's name has adversely affected their getting welfare benefits. This will be examined with reference to one welfare scheme.

9. PRADHAN MANTRI KISAN SAMMAN NIDHI (PM KISAN)

PM KISAN is a Central Sector Scheme, which is implemented in Tamil Nadu from 2019 to supplement the financial needs of all landholding farmers' families in procuring various agricultural inputs to ensure proper crop health for enhanced yield. Under the Scheme, Rs.6000/- per year is transferred by Government of India directly into the bank accounts of the eligible farmers having own cultivable lands in three equal installments under Direct Benefit Transfer mode (Aadhar Based

[8]Bentley, J. (1987. Economic and ecological approaches to land fragmentation: InDefense of a Much-Aligned Phenomenon. Annual Review of Anthropology, 16:31-67.)

[9]Shuhao, T. (2005Land fragmentation and rice production: A case study of small farms in Jiangam Province, P. R. China, Unpublished Ph.D. Thesis

Payment System-ABPS). The objective of this farmer-focused scheme is to ensure that all farmers receive benefits directly without the involvement of intermediaries. Additionally, farmers can access short-term loans through the Kisan credit card. The aspiring applicants are to provide their Aadhaar card, proof of citizenship, land ownership documents, and bank account details.PM Kisan scheme is highly useful scheme to tribal farmers' living in the study area. The area block agriculture unit was contacted to ascertain the number of beneficiaries under this scheme in the study area Table 8.

Table 8

Table 8 PM Kisan Beneficiaries in the Study Villages

Sl. No.	Village	Patta holders			Beneficiaries of the scheme	% of beneficiaries
		Single	Joint	Total		
1	Alleri	57	55	112	31	28
2	Elluparai	7	8	15	16	107
3	Mulluvadi	61	85	146	83	57
4	Peenjamandai	285	515	800	498	62
5	Periyapannaparai	14	5	19	26	137
6	Pudukuppam	5	38	43	21	49
7	Jardhankollai	173	274	447	173	39
8	Pelampattu	184	256	440	925	210
		786	1236	2022	1773	88

Source: Compiled from the Office of the Assistant Director of Agriculture, Anaicut, Vellore district-2025

The data in Table 8 presents a mixed picture as the beneficiaries under the scheme do not agree with the total number of patta holders in these villages. In Alleri village, the number of beneficiaries is only 31 (28%) while the total number of patta holders is 112. On the contrary, in Elluparai, the number of patta holders is 15 but 16 persons (106.66%) are getting the benefits. Evidently, it shows one more tribal farmer is getting the benefit additionally. It may perhaps due to getting of a patta by a stakeholder of a joint patta in that village. On the other hand in Mulluvadi village, the percentage of beneficiaries is only 56.84. Peenjamandai also joins with Mulluvadi, in that the percentage of beneficiaries is only 62.25. In these two villages quite a large number of patta holders are not getting the benefits of this scheme. In the case of Periyapannaparai, like Elluparai, the number of beneficiaries under the scheme exceeds the total number of patta holders (136.84%). Pudukuppam presents a dismal picture in the sense; the percentage of beneficiaries is only 38.70. Jardhankollai is no way different from Pudukuppam, as its percentage is only 38.70. However, the Pelampattu, strikingly has the highest percentage of beneficiaries (210.22). The overall position seems better in the sense, it stands 87.68% but it gives a misleading picture of the actual number of beneficiaries in all these villages. The villages who have beneficiaries' exceeding 100% of total patta holders and particularly the case of Pelampattu deserves further field study to find out how the village is able to show better performance than other villages, despite the fact all tribals have no other titled documents than pattas issued under ryotwari system.

10. CONCLUSIONS AND SUGGESTIONS

The villages are governed byryotwari system of land revenue since British period and tiller tribals were assigned pattas on the basis of the size of holdings cultivated by them. The land holdings are dry type and cultivation is rainfed. As a consequence, agricultural operations in these villages are confined to seasonal rains, mostly stretching over a period of 5 to 6 months in a year and the major crops raised year after year are mostly similar eg., samai, ragi, groundnut or horse gram. In irrigated conditions, paddy is raised, followed by sugarcane and banana. Changes of crops rarely take place due to lack of assured irrigation. Absence of crop rotation, in course of time causes soil infertility. One of the primary causes for backwardness in these villages is primitive agronomic practices in small and fragmented uneconomic holdings.

As income from agricultural and forest resources declining, tribals mostly youths in these villages opt for migration to get unskilled jobs elsewhere. In season less months they migrate to urban and adjoining states in search of livelihood. Increasing outmigration, especially among the youth, has led to abandoned agricultural fields and a rise in the proportion of aging farmers in the region [10] Pandey (2022). The farming system due to fragmented landholdings and erratic climatic conditions, gives significant challenges[11] Rawat (2020). Steep slopes and rocky terrains hinder mechanization (Singh et al., 2021)[12].Also**,** small plots are less amenable to mechanization preventing tribal farmers to adopt modern agricultural techniques that could pave way for high productivity. Consequently, much of the farming in these villages remains labor-intensive, leading to lower yields. With small operational holdings, tribals forfeit their bargaining power in marketing their products and often exploited by middlemen, traders and exploiters. Lower agricultural productivity results in lower incomes for farmers, exacerbating poverty and backwardness.

11. WHAT IS TO BE DONE?

For tribals, land is not only for their livelihood but culturally and emotionally attached to them. Owning lands is considered to be their social dignity. They are so much welded to the lands, even while they were on migratory jobs elsewhere; they made it a point to visit their native village as a matter of routine to participate in village annual festivals, celebration of village deity and community functions like marriage, birth and death. Fragmentation of land holdings though affect their income; they are helpless how to overcome the constraints? Unfortunately, welfare measures for the development and economic growth of tribals are not focused on the issue of fragmentation of landholdings in hilly areas. This is the main reason, despite implementation of quite a lot of welfare measures in other sectors; there is no appreciable improvement in tribal economy or tribal habitats.

Tribals by nature are community oriented. It is therefore essential to make them aware how the fragmentation of land holdings over the years has adversely affected their income and well being. It has driven them to vicious circle of poverty. They must be educated about this and to create awareness of the need to break the vicious circle. Tribals by nature are attached to native village and pay highest

[10]Pandey, S. (2022). "Organic Farming in Uttarakhand." Agro Ecology Today, 4(2), 25–29.
[11] Rawat, A. (2020). "Climate Challenges in Himalayan Agriculture." Indian Journal of Mountain Studies, 10(4), 33–40)
[12] Singh, R., et al. (2021). "Soil Conservation Practices in Uttarakhand." Journal of Agro ecology, 8(2), 45–50

respect to their ancestors. It is their significant noble quality which may be useful for consolidation of the land holdings fragmented into pieces over the years by the operation of law of inheritance. It is a notional consolidation for the purpose of land and irrigation development to make the landholdings highly productive. For this purpose, it is incumbent on the President of the Panchayat, of a village to rope in the cooperation of the Ur Goundan or Nattan of the hamlet / village, for easy identification of the present owners of the fragmented holdings that has been derived from a common ancestor to whom the patta was originally issued. Gradually, this activity may be extended to other cases covering the whole of a village, and a list be prepared indicating the total area so notionally consolidated with the names of the owners and extent of area is consolidated. It should be made clear to the participating tribal owners that this measure in no way forfeit their ownership rights now they enjoy and the measure is a genuine attempt for consolidation to make their lands more productive and income yielding.

In the backdrop of the tribal habitats and culture, this type of initiation is natural and better and easily acceptable to the tribals than the co-operative farming or contract farming types. Lands so consolidated, as a viable unit, community wells may be dug up at the strategic points, so that distribution of water for irrigation to various fields can be done smoothly and scientifically. Single crop system is bound to give way for multi crops system. Once water sources are created and developed, modern agriculture techniques supported by mechanization may be employed to bring anticipated productivity. The tribal farmers need to be given suitable trainings in modern agronomic practices and improve their capacity buildup in the beginning stages. They can be encouraged for crop diversification with priority to high value crops. Once, this measure brings results, the youths who have opted for migration, will put an end to outmigration as their lands provide them the needed income and security. Both State and union Governments effectively intervene with appropriate reforms including rights of ownership to fragmented holdings irrespective of size be accorded simplifying procedures to give patta to small holders overlooking the existing cumbersome administrative procedure. If necessary, an Act may be passed to do this and once this is done, there will be perceptible improvement in tribal economy.

CONFLICT OF INTERESTS

None.

ACKNOWLEDGMENTS

None.

REFERENCES

Bentley, J. (1987). Economic and Ecological Approaches To Land Fragmentation: In Defense of A Much-Aligned Phenomenon. Annual Review of Anthropology, 16, 31–67. https://doi.org/10.1146/annurev.anthro.16.1.31

British Standing Orders of the Board of Revenue. (2006). Land Revenue, Settlement, and Miscellaneous (Vol. I, Original Work Published 1854). Account Test Centre, Madurai.

Pandey, S. (2022). Organic Farming in Uttarakhand. Agro-ecology Today, 4(2), 25–29.

Rawat, A. (2020). Climate Challenge in Himalayan Agriculture. Indian Journal of Mountain Studies, 10(4), 33–40.

Shuhao, T. (2005). Land Fragmentation and Rice Production: A Case Study of Small Farms in Jiangam Province, P. R. China (Unpublished Ph.D. thesis).
Vellore Forest Division. (2025). Working Plan Documents.