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Rethinking the Impact of Land Certification on Tenure Security, Land Disputes, Land Management, and Agricultural Production: Insights from South Wello, Ethiopia

Bichaye Tesfaye [1,2,*], Monica Lengoiboni [2], Jaap Zevenbergen [2] and Belay Simane [3]

[1] Centre for Food Security Studies, College of Development Studies, Addis Ababa University, Addis Ababa P.O. Box 1176, Ethiopia
[2] Department of Urban and Regional Planning & Geo-Information Management, Faculty ITC, University of Twente, 7500 Enschede, The Netherlands; m.n.lengoiboni@utwente.nl (M.L.); j.a.zevenbergen@utwente.nl (J.Z.)
[3] Center for Environment and Sustainable Development, College of Development Studies, Addis Ababa University, Addis Ababa P.O. Box 1176, Ethiopia; belay.simane@aau.edu.et
* Correspondence: b.t.tessema@utwente.nl or bechaye.tesfaye@aau.edu.et

Abstract: Land is a precious resource in the Ethiopian highlands, where the entire agricultural system depends on rain-fed system. The resource faces multiple interconnected environmental and socioeconomic challenges. Among these, the absence of tenure security has significantly affected farmers' willingness to adopt soil and water conservation practices (SWCPs), leading to a decline in land productivity, hindering household food security, and contributing to an increase in land-related disputes. Bearing this in mind, the government of Ethiopia (GoE) has undertaken two rounds of land certification programs in selected regions, one of which was Amhara National Regional State (ANRS). This study examined how land certification strengthens tenure security, lowers land-related disputes, motivates farmers to employ SWCPs, and raises the productivity of farm plots in Dessie Zuria and Kutaber Woredas. The research followed an exploratory survey method which utilized both qualitative and quantitative data. The survey involved purposefully selected 401 household heads. Additionally, cross sectional data were collected from various sources, including Woreda and zonal agriculture, court, land, and Natural Resource Management (NRM) offices. Quantitative data were analyzed using frequency tables, percentages, graphs, figures, cross-tabulation, and descriptive statistical methods. Meanwhile, qualitative data were transcribed, grouped, and interpreted in line with the research's objectives. SPSS software version 26 was used for data analysis. The findings denoted a positive relationship between land certification and tenure security. Furthermore, enhanced tenure security has played a positive role in reducing land-related disputes, initiating farmers to invest in SWC practices and improving the productivity of farm plots. The research suggests the adoption of a cadastral land registration system, the encouragement of community involvement, and the enforcement of laws and bylaws. The research recommend implementation of cadastral land registration system, promote community participation, and enforcement of laws and bylaws. The work has implications for development practitioners, academia and policymakers working on land tenure, SWC practices, and food security.

Keywords: certification; tenure security; dispute; land management; agriculture; South Wello; Ethiopia

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1. Introduction

For small holder farmers, land is not just a piece of earth; it represents their livelihood and sustenance. That is why many Scholars have given emphasis on the importance of land. For instance, in his essay entitled *"food comes from the soil"*, Bennet noted how land is vital for food production and sustenance of livelihoods [1]. Land is the primary source of income, investment, social standing, and wealth for smallholders across the

globe. Land holds paramount importance in addressing a wide range of human needs, including necessities such as food, shelter, and water [2]. Additionally, it plays a crucial role in fulfilling higher-order human needs such as ensuring safety by serving as a store of wealth, as well as contributing to self-esteem and self-actualization. This significance of land is particularly pronounced in many African economies, where social, political, and economic aspects of life heavily rely on land due to the substantial contribution of agriculture and natural resources to GDP, national food security, employment, and export earnings [3]. The resource has no cost of production, although its usage can be switched from less to more profitable [4]. Globally, smallholder farmers depend on land for their livelihood [5]. The agriculture sector globally employed 874 million people in 2020, or 27 percent of the workforce, and generated 4 percent of the agricultural GDP or around USD 3.5 trillion [6]. The agricultural land, which is the main motor of the global economy, declined by 127 million ha between 2000 and 2019 [5]. Indeed, in 2021, there were 770 million undernourished people. Similarly, Africa has the highest undernourishment, with 21percent of its people suffering from malnutrition [7].

Among other things, lack of tenure security remains accountable for the deficient performance of the agriculture sector in many parts of the world. In such circumstances, land registration could be one of the remedies to solve such uncertainties. The International Federation of Surveyors (FIG) defines land registration as "the official recording of legally recognized interests in land" [8]. Typically, formal registration is confirmed through a legal document that validates rights associated with a piece of land are in accordance with the law and are protected against any claims by third parties [2].

It is important to note that land registration programs have been successful in securing land rights or in instilling improvements in agricultural productivity. Research carried out by Katusiime and Schutt [8] indicate that farmers are more willing to invest after securing tenure since they feel confident in maintaining long-term land improvements and conservation measures. Besides, the experiences of African countries also show that tenure security may be a condition for soil and conservation systems [9]. Likewise, empirical evidence indicates that land conservation investments were widespread among peasants in most regions of Ethiopia, where farmers received land certificates for their plots [10]. However, the resource seen exposed to disputes emanated from scarcity and greedy natures human being.

Land disputes arise when people's efforts to utilize land for their various needs with conflicting interests in owning, using, or controlling the land and its resources [11]. These disputes are social and interpersonal conflicts that occur when individuals and groups clash over the land, driven by competing interests, differing identities, or contrasting views regarding a specific piece of land [12,13]. Such disputes can take various forms, ranging from disputes between single parties (e.g., disputes between neighbors over property boundaries, conflicts among siblings over inheritance distribution, disagreements related to land sales and transfers, and disputes concerning land use rights) to disputes involving multiple parties at either a broader or narrower scale [13,14].

Land disputes have contributed to low agricultural productivity due to increased days spent on litigations. Farmers' agricultural productivity declines when farmland disputes threaten their food security and livelihood. Farmland disputes severely hinder and reduce farm-level productivity [15]. Trends in land-related disputes are increasing from time to time. For instance, in Bangladesh, with land litigation pending with central courts, more than 1.4 million people were affected by land-related disputes [16].

Research carried out in Rwanda signposts a county-wide increase in land disputes, where land disputes at the household level are (34.9 percent) [17]. Farmers affected by economic crises and susceptible to needless expenses during tense periods of land disputes. Litigants and witnesses are compelled to pay for transportation, personal living expenses, material expenditures, legal representation, and other things that make it harder for them. Farmers may incur all these expenses to win their cases. However, they may occasionally lose, which demoralises them in addition to their financial difficulties and

failure to regularly engage in agricultural activities [18]. The problem calls for a clear and workable policy as the agricultural ecosystem remains integral to farming households. A farming household, from a sociological perspective, refers to a household in which the primary occupation and source of livelihood for its members is agriculture or farming. These households are characterized by their dependence on farming activities, which include the cultivation of crops and/or the raising of livestock for subsistence or income generation [19]. In the sociological context, a household, in general, is defined as a group of people who live together in the same residence and share communal living arrangements, responsibilities, and resources [20]. This definition applies to farming households as well, but it specifically highlights the economic and social dynamics associated with agricultural activities within the household. Every household need to be free from any sort of land dispute in order to be productive and self-reliant. Such circumstances call for workable and clear tenure system. It is obvious that if the land tenure system is unclear, this should be solved first, even before adjudication starts [21].

As was commonly said, agriculture is the mainstay for farming households in Ethiopia. Nevertheless, its performance remained poor and staggering to feed the country's enormous population. Due to low agricultural productivity and increasing food prices, the country suffers from food shortages, where a considerable amount of food aid comes from donors annually [22]. Many categories of the current land-related issues, such as tenure insecurity, declining farm size, youth landlessness, land degradation and poor interest of farmers to engaging in land conservation interventions, subsistence farming practices, and prevalence of a high number of land-related disputes, are identified as bottlenecks for the poor performance of the sector [23].

Ethiopia's land tenure relations have a long history of official interference, with the state exerting considerable influence on local land tenure under various political regimes [24]. Achieving household and national food security has been emphasized as fundamental for survival and living an active and healthy life, which requires a multifaceted approach to succeed. One of these approaches is strengthening the land rights of smallholder subsistence farmers in Sub-Sahara Africa (SSA) [25]. Hence, there is a pressing need for a profound overhaul of the sector, with the core concerns revolving around the land tenure system.

The Government of Ethiopia (GoE) has undertaken two rounds of land certification since the 1990s. Compared to other African countries, Ethiopia's reform was seen as the most participatory and cost-effective and could be seen as a model for other countries [26]. The estimated cost of Ethiopia's first-level certification is approximately US$1 per parcel, considered one of the most cost-effective in the world [27,28]. The program has achieved considerable progress, with around 20 million plots registered by 5.5 million families in short instances [29]. Nevertheless, the program is confronted by many interwoven technical, institutional, legal, and economic issues. Among other things, the problem of data storage and implementation, logistic and budget matters, and failure to apply GPS-GIS and remote sensing techniques were significant bottlenecks of the program [30].

Several studies examined the various aspects of land certification in Ethiopia and elsewhere. Among others were; the effects of land certification on rural households [31], the Impact of Land Certification on Sustainable Land Use Practices [32], property rights and land disputes [33], linking land tenure and watershed management [34], impacts of soil and water conservation practices in crop yield [10], the functionality of land certification [35], impacts of second-level land certification and household take-up development programs [36], land tenure in post-certification, tenure security in different regimes of Ethiopia [24]. However, these researchers focused only on the causal relationship between the single elements of tenure security instead of seeing the prevailing correlation between the three prominent aspects of tenure security.

Cognizant of this reality, the research aims to answer four questions: (i) How does a land certification program sustained tenure security among the studied households? (ii) How has the certification program impact on reducing land disputes? (iii) How have

farmers demonstrated an interest in adopting SWCPs after receiving a land certificate? And (iv) How does the program create the conditions for increased agricultural output? The research investigates how the interaction of these factors impacts smallholder farmers in the Kutaber and Dessie Zuria Woredas within the South Wello zone (SWZ). The study focused on 401 household heads who took part in Soil and Water Conservation (SLM) initiatives and land certification programs. It also utilized cross-sectional data collected from various government agencies and bureaus at different administrative levels. The research outcome will serve as input for policymakers, the public and private sectors, researchers and the public for the upcoming development interventions and land tenure related policy formulation endeavors. The organization of the paper proceeds as follows. Following the introduction, a review of the concepts of land certification, tenure security, land-related disputes, and land management preservation are presented in section two. Section three describes the methods, section four offers the result, and section five deals with the discussion. Finally, section six focuses on our conclusions, recommendations, and future research work.

2. Related Literature

This section describes the main concepts of the research. It defines tenure security and explains the role of land certification. Then it highlights the importance of land certification in reducing land-related disputes. The literature continues with a brief introduction on how land certification and the resultant tenure security contribute to land management practices and agricultural production. The conceptual relationship between various elements of tenure security is indicated below (Figure 1) and further elaborated in the respective sub-sections of the chapter [37].

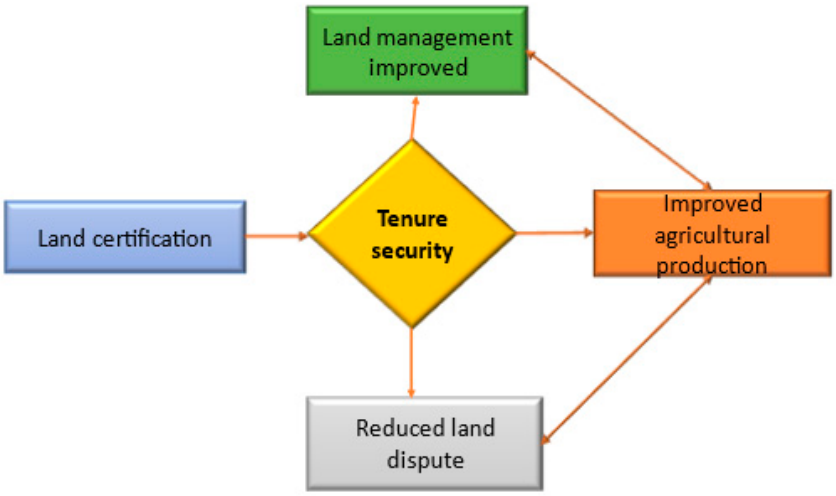


Figure 1. The conventional view of land tenure adapted and modified from Broegaard, 2005 [37].

2.1. The Concept of Tenure Security

The term "tenure" describes the standing of people or organizations concerning a property. To this extent, there are various tenure types: freehold, delayed freehold, registered leasehold, public rental, private rental, shared equity, customary ownership, the religious tenure system, and non-formal tenure system [38,39]. In addition, Maxwell, and Wiebe [40] defines tenure as the system of rights and establishment governing access to different land uses. Much disagreement was encountered while defining land tenure security for the rural and urban poor in developing countries [41]. However, tenure security encompasses a collection of entitlements that involve the liberty to remain on one's property, utilizing and gaining from it in manners that hold significance for the individual or community [42].

Tenure security can give individuals and communities a sense of stability and confidence in their future, leading to increased investment in land and natural resources [43].

Tenure security can result in increased productivity, income, and improved natural resource management. In addition, tenure security can have positive social outcomes, such as increased gender equality and enhanced community cohesion [44].

Overall, tenure security is a complex and multi-dimensional concept that is critical for ensuring the sustainable use and management of land and natural resources, as well as promoting social equity and economic development. While measuring tenure security can be challenging, research has shown that secure tenure has a range of positive impacts on individuals, communities, and broader development outcomes. In nutshell, tenure security is a multifaceted and intricate concept that plays a crucial role in guaranteeing the sustainable utilization and stewardship of land and natural resources while also fostering fairness in society and supporting economic progress. While measuring tenure security can be challenging, research has shown that secure tenure has a range of positive impacts on individuals, communities, and broader development outcomes. As such, efforts to strengthen and promote tenure security should be a key priority for policymakers and practitioners working in the field of land and natural resource management [45].

2.2. Land Certification

Land certification provides documentation to attain tenure security. Legalizing land rights ensures family land right and provide enforcement of these rights from the people and the farmer's organization to the state [46]. The contribution of land titling for land tenure security remains debatable. Two opposing and contrasting theoretical and ideological positions remain pivotal in land titling literature. The first work in the literature perceives land titling as a basic mechanism to generate economic growth. The functionality of this theory has been labelled by Broegaard [37] as the conventional view of land-people's relationships. The second domain of literature suggests that relations between people concerning the land are more complex than assumed in the first position. These assumptions can be reviewed, problematized, and empirically questioned. Commenting on the significance of land titling on tenure security, Deininger et al. [47] argued that land titling significantly reduces the grasp amongst land users that land will or can be expropriated.

There is a long-time agreement that land titles and clarity of property rights and property boundaries play a significant role in offering tenure security. Also, tenure safety is necessary to present land-use investment incentives [48]. Influential. study by Feder et al. [49] in Thailand concluded that land titles create tenure safety, grant the higher right of entry to larger quantities of formal credit, elevate degrees of funding in the land and increase land prices. Land certification will pave the way for effectively implementing land markets, land contracting and sharecropping. The widespread adoption of land-renting and sharecropping practices will help farmers adopt the cluster-based farming strategy. Clustering boosts farmer income, promotes long-term crop yield increases, aids market chain extension, and contributes to other development goals [50]. As Porter [51] described, a cluster offers efficiency, effectiveness, and flexibility by linking farming communities into a robust organizational forms. Furthermore, clustering facilitates the economies of scale problems each smallholder farmer could face. Besides, whatever benefits we expect from any land certification program, it would rather be tailored to solve nation's problems. The international land community has acknowledged that individual land titling cannot provide security of title to many people in the world in a prompt manner, instead, nations must embrace a spectrum of land rights [52].

2.3. Role of Tenure Security on Adoption of SWCPs

Insecure tenure diminishes soil fertility and accelerates land degradation by discouraging farmers from not investing in fertility improvement initiatives [53,54]. Evidently, certain short-term investments aimed at boosting productivity, such as utilizing manure and compost, planting perennial trees and fruits used as an agroforestry, and implementing physical and biological soil and water conservation (SWC) practices, encounter limitations in areas where tenure security is absent. Empirical evidence reinforces this notion, for in-

stance, in Ethiopia, upon receiving land certificates for their plots, farmers have undertaken semi-permanent investments such as terracing across various regions [55].

Similarly, in Fiji, native and crown land leases issued under the Agriculture Landlords' Tenants Act are incompatible with sustainable land resource management. The user tends to exploit the land for financial gain, even though the lease will expire after 30 years of occupation, leading to prominent levels of land degradation [56]. Along with this, research conducted in the Ethiopian highlands found that land tenure insecurity was blamed for the mediocre performance of SWC interventions [57–60]. Nonetheless, insights gleaned from multiple African countries underscore that while tenure security is a necessary precondition, it might not be a sufficient condition for the successful implementation of soil and conservation systems [61].

2.4. Land-Related Disputes

According to sociologists, a dispute is a social phenomenon that involve at least two parties caused by disagreements between the parties' interests or social positions [62]. Therefore, land dispute can be defined as an abuse of, restriction on, or disagreement about land ownership rights [63]. Land disputes are widespread and can occur at any time or place. Dispute could happen between households, neighborhoods and neighboring communities over land rights and boundaries [64]. The dispute between traditional and 'non-traditional' local organizations in land management and dispute resolution, inheritance-related dispute among family members, the dispute between 'newcomer' households and long-standing residents, and dispute arising from household mobility are among others [25].

Each dispute has its unique dynamics, but every dispute goes through at least three phases: pre-dispute, in-dispute or crisis, and post-dispute [65]. The three phases are looked at in more detail in dispute management. Subject to debate, various research on land disputes has been conducted worldwide. Resource governance school of thought has contested these two schools of thought. The school of thought known as resource scarcity is predicated on the notion that when a resource, in this case, land, becomes scarce, competition for control arises. According to Machyo [66] and Gulliver [67], population pressure, unequal access to land, inappropriate distribution of land, environmental changes, rising demand for land, and large-scale commercial farming remain causes of land scarcity, which gradually lead to land-related disputes. In contrast to the 'land scarcity' school of thought is the 'resource abundance' argument, based on empirical observations that access to land could still be hindered, and conflicts engendered, under conditions of land abundance [68]. This perspective notes that resource abundance incites greed-driven and speculative tendencies by individuals and groups, hindering the access of a large section of society to land. The resource abundance argument is linked to weak institutions and weak governments plagued with poor economic growth and instability, creating greater vulnerability to conflict [69]. Nevertheless, various political and policy systems, cultures, and values related to multiple sets of norms can be the root causes of land disputes [70].

Nonetheless, land disputes negatively impact the growth of the economy, society, environment, and physical space. The case is particularly true in developing and transitional nations, where weak land market institutions, opportunities for shady business dealings, and a dearth of land access for the poor exist [71]. Research carried out by Deininger and Castagnini [72], indicate that land disputes can reduce output by 5–11 percent. Similar research conducted in Kenya shows that the average manure application is 1515 kilograms per hectare on parcels with outstanding disputes compared to 3720 kilos per hectare on fields with no disputes. A parallel study shows that on parcels with active minor arguments, an average of 83.7 kilos of chemical fertilizer per hectare is applied. In contrast, 94 kilograms per hectare was used on parcels with no operational disputes [73].

3. Methods

3.1. Site Description

South Wello Zone is one of the ten administrative zones in Amhara National Regional State (ANRS). North Shewa and the Oromia region bound SWZ on the west; East Gojam on the northwest; South Gondar on the north; North Wello on the northeast; the Afar Region, the Oromia Zone and the Argobba special Woreda on the east. Astronomically, SWZ lies around 11°8′ N, 39°38′ E (Figure 2c); and has an area of 17,067.45 square kilometers with a population of 3,239,475 [74].

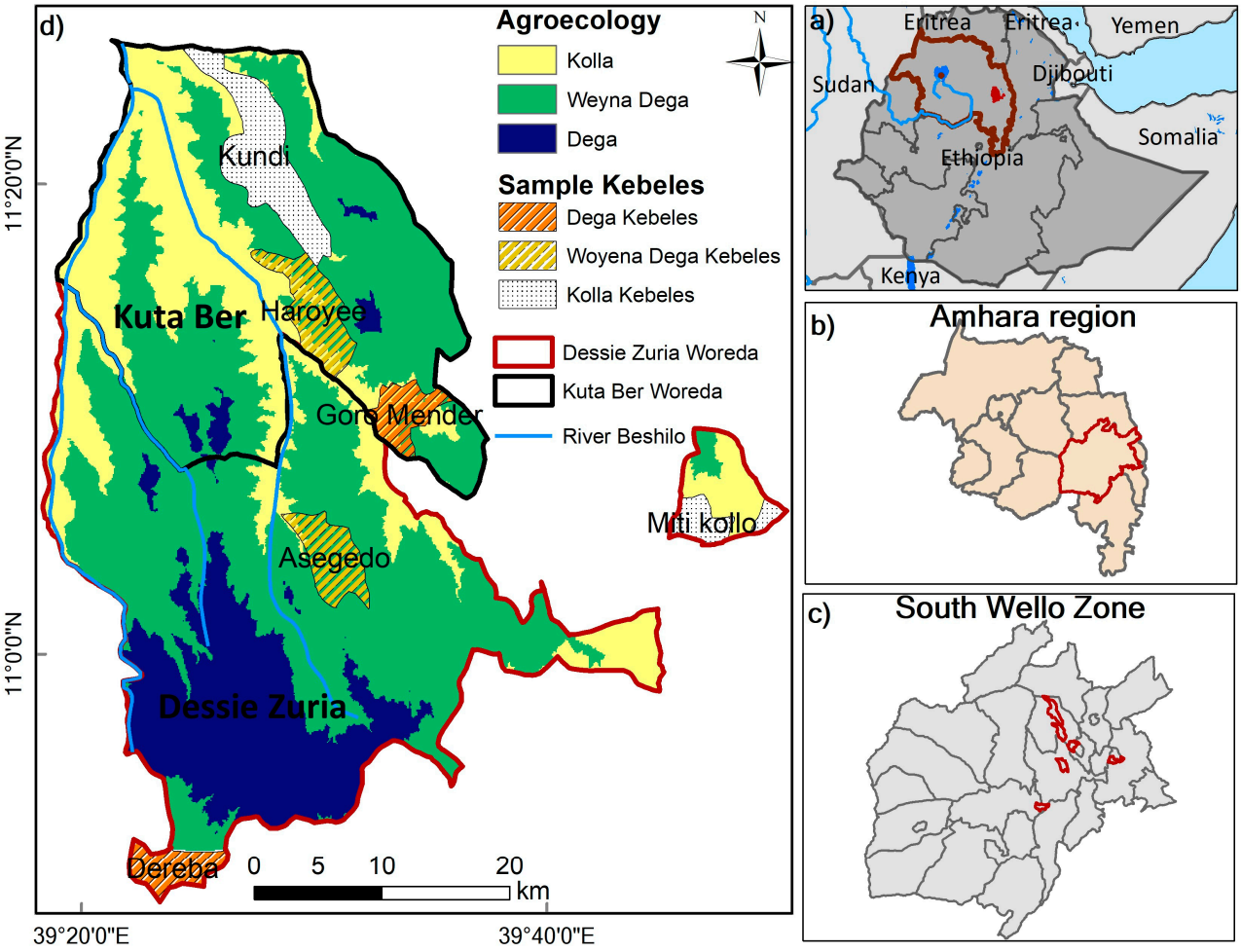


Figure 2. Map of the study area: (**a**) Ethiopia and the horn; (**b**) Amhara region; (**c**) South Wello Zone; and (**d**) Dessie Zuria and Kutaber Weredas.

The elevation ranges from 927 to 4261 meters, and the average annual temperature and rainfall are 15–20 °C and 500–900 mm, respectively [75]. A mixed plateau, rugged mountains, deep gorges, and flat plains characterize the landscapes of SWZ. Land is the dearest resource among farmers. Farmers in the study are seen trying to plant as much as possible on their small plots of land. On average, rural families in the research area have 0.77 ha; it is insignificant compared to ARNS, which is 0.71 ha. Land possession varies across study woredas; 0.89 and 0.71 ha for Dessie Zuria and Kutaber Woredas, respectively. A projection about population reveals that land holding size at the national level is 0.6 ha per household [76]. Such tiny plots prevent farmers from producing sufficient yield to fill their household food basket [77].

Sites selected for the research were Dessie Zuria and Kutaber Woredas, two of the twenty Woredas in SWZ (Figure 2d). Six kebeles, the lowest tier of administrative level in Ethiopia (Goromendera, Kundi, Haroyee, Asgedo, Dereba and Miti Kollo), three from

each Woreda, representing the three distinct types of agroecology, were sites of the survey. Dessie Zuria has an area of 937.32 km^2, while Kutaber covers 719.92 km^2. Dessie Zuria was inhabited by 186,631, and Kutaber by 117,163 people in 2020. The average agricultural densities in the two Woredas were 199 and 162 persons/km^2, respectively. Crop-livestock farming is practiced in both Woredas, with wheat, teff, barley, sorghum, oats, beans, and peas being major staple crops. Land tenure is state owned with private land use rights, where government-supported extension support services are in place.

3.2. Methods

The study's methodological framework comprised a case study based on qualitative and quantitative research approaches. Both qualitative and quantitative data from primary and secondary sources have been utilized. Data was collected between 2020 and 2021. The investigation began with a key informant interview (KII) from land administration office, kebele administration, model (model farmers are used by extension agencies to serve as in-community representatives for the diffusion of new agricultural inputs or technologies.) and non-model farmers, elderly, and women farmers representing each of the six survey kebeles. The interview covered contextual features of land certification programs, including certification's advantages, tenure security, sharecropping, property renting, SWCPs, agricultural inputs, crop production, land disputes, and locally available land-related arbitrations and litigations mechanisms. A total of 401 household heads were interviewed. Subsequently, twelve focus group discussions (FGDs), with the participants having different gender, ages, and economic categories, were conducted in six survey kebeles. The FGDs sought to follow up most of the questions raised while undertaking KIIs.

In addition, secondary data regarding the thematic areas of the research, both printed and electronic sources, have been read from courts, land administration offices, and agricultural bureaus. It is sometimes challenging to put stand-alone land-related cases from other cases, as some related criminal cases might be initiated from land-related disputes. Even though courts do not have a well-organized database, the research has used the data of limited years as proxy indicators of land disputes. During the data collection, the researchers paid a visit to observe the study area using a village transect walk. The tool helped the researchers to attend dispute resolution gatherings arranged by elderly, Kires (locally available self-help organization), Abagars (Muslim leaders), and village siteta committees (village peace committee), allowing the researchers to find facts that were overlooked during FGDs, KIIs, and household surveys. Information obtained during the visits has been recorded and documented using photography, note-taking and voice and video recording. The unit of analysis for this research comprises Dessie and Kutaber Weredas (administrative divisions) and the households selected for the survey within these areas.

Data analysis was conducted using SPSS software version 26. The quantitative data were analyzed using various techniques such as frequency tables, percentages, graphs, figures, cross-tabulation, and different descriptive statistical methods. In addition, the qualitative data were transcribed, grouped, and analyzed in light of the research objectives.

4. Result

This section presents results for questions that the study aspires to answer. Section 4.1 deals with respondents' socioeconomic characteristics and describes their gender, age, education, and land-related information. Section 4.2 draws links between land certification and tenure security, Section 4.3 shows results on land certification and land-related disputes, and Section 4.4 examines the connection between land certification and land management practices and how the mentioned variables have contributed to agricultural production.

4.1. Socioeconomic Characteristics of the Respondents

There were 401 sampled respondents interviewed, and considering the criteria adopted for selecting the study Woredas, they are representatives of the two Woredas populations. Of the households interviewed, 80 percent are male-headed, and the remaining 20 percent

are female-headed. Respondents' age ranges from 20 to 71 years, where 71 percent of households are younger than fifty, and the population growth will be high as most of them already have many children. The preponderance of a young population in the study area implies that the population density will increase rapidly and may stress the available land resources. When such circumstances prevail, it exacerbates and remains push factors for migration to non-farming sectors and expose rural landless to several forms of social and environmental malpractices. Those who could not read and write constituted below 40 percent of the total respondents (Table 1), amplifying the difficulty of diffusing innovations and recent technologies among the illiterate-dominated community.

Table 1. Socioeconomic characteristics of the respondents.

(a) Gender			
Woreda	Man	Woman	Total
Dessie Zuria	123	34	157
Kutaber	201	43	244
Total	324	77	401
(b) Education			
Educational level	Frequency	percent	Cumulative frequency
Illiterate	159	39.7	39.7
Primary school	168	42	81.6
Secondary school	74	18.4	100
Total	401	-	-
(c) Family size			
	Male	Female	Total
Dessie Zuria	2.73	2.78	5.5
Kutaber	2.52	2.48	5.0
Average	2.62	2.63	5.25
(d) Land size			
Woreda	Average land size owned by household	No. of parcels	Average walking distances to farm plots in minutes
Dessie Zuria	0.89	3.7	14.2
Kutaber	0.71	5.2	15
Average	0.77	4.45	14.6

4.2. Land Certification and Tenure Security

Ethiopia has implemented the land certification program in two stages. Ethiopia's first land certification program was commenced by GoE in 2003, except for Tigray, which did so in 1998. Until 2018, GoE has managed to measure and register 21, 200,000 parcels and delivered certificates to 11, 200,000 parcels in ANRNS, Oromia, Southern Nations and Nationalities and people (SNNP), and Tigray regions (Table 2) [78]. In the Tigray and Amhara regions, approximately 97% and 87% of households, possess registered land use rights. The coverage for Oromia and SNNP is a little lower, with 85 and 84 percent. The figure in the table below excludes pastoral households.

Table 2. Number of parcels registered and certified in Ethiopia.

Year	Parcels Measured and Registered. (Number of Parcels)	Certificate Delivered
Until 2013	1,451,234	475,178
2014	359,816	97,772
2015	1,908,170	695,670
2016	4,393,635	1,252,999
2017	3,867,191	3,045,576
2018	9,219,904	5,632,805
Total	2,120,000	11,200,000

Source: Environment, Forest and Climate Change Commission, 2017 [78].

Similarly, SWZ and the two study Woredas were part of the program and involved rural landholders in the two rounds of land certification. According to South Wello Land Administration and Land Use Department [79], 5,293,397 parcels of land were registered, which has benefited 907,391 households living in the rural Woredas of the zone (Figure 3). The two research Woredas, Dessie Zuria and Kutaber have registered 496,573 and 450,901 parcels belonging to 50,323 and 31,089 households. The number of participants in Kutaber is lower than in Dessie Zuria because Kutaber Woreda did not take part in the second-round certification program (Figure 3). Yet, the second certification program, which requires the cadastral approach, extensive budget, and more skilled human resources, was implemented as a pilot project in some selected Woredas of the zone [80].

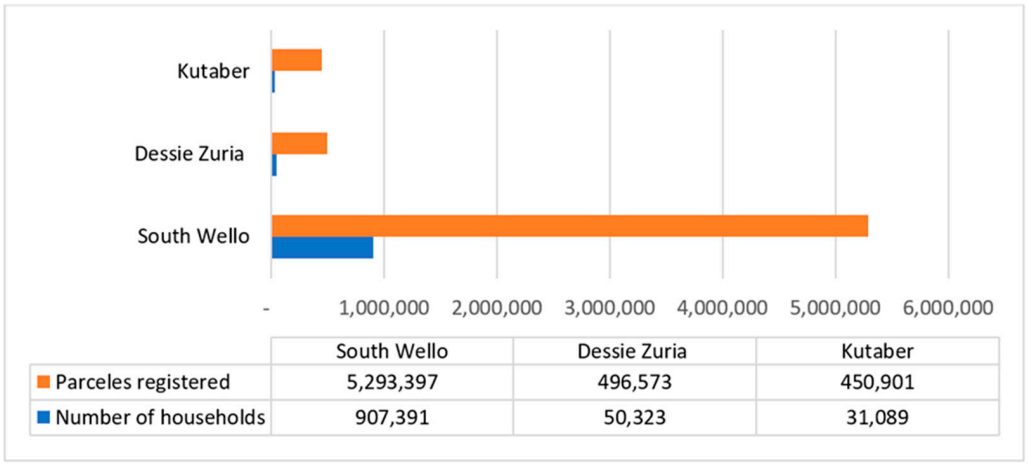


Figure 3. Trends of land certification in SWZ and the study Woredas. Source: South Wello Land use and land administration department.

All 401 respondents were asked if they had obtained certificates for plots under their possessions. The research reveals that 371, or 92.5 percent of the respondents, got certificates. Nevertheless, 30 (7.5 percent) have not received a certificate due to their tiny land size, or less than 0.25 ha of land (Table 3). The federal and regional legislation prevents issuing certificates for farmers having less than 0.25 ha. Admittedly, the result portrays the high intent of farmers to document their land and obtain certificates in all six Keble's.

Farmers who obtained certificates were asked if owning a land certificate has a benefit in terms of land management, tenure security, land dispute reduction, and agricultural production. Of the 371 respondents, 365 or 98.38 percent confirm that the certificate has benefits. Contrary to this, six respondents or 1.62 percent, reported that having a land certificate has no use (Table 4).

Table 3. Respondents who received certificates by survey kebeles.

Have You Received a Certificate for Your Plots? (n = 401)				
Woreda	Kebele	Yes	No	Total
Dessie Zuria	Dereba	35	5	40
	Asgedo	66	8	74
	Serdom	43	0	43
Kutaber	Goro Mendera	64	4	68
	Haroyee	38	9	47
	Kundi	125	4	129
Total		371	30	401

Table 4. Respondent's view on the benefits of land certification.

	(n = 371)				
	Yes	**Percent**	**No**	**Percent**	**Total**
Do you think having a certificate has a benefit?	365	98.38	6	1.62	371

During qualitative sessions (FGDs and KIIs), discussants listed ten variables considered as benefits of land certification. The household survey included ten variables for further substantiation and proof. Henceforth, each variable given a scored based on a Likert scale from 1 to 5. Of the benefits mentioned, the program's contribution to gender equity scored 1450 and stood first. The certificate's content includes the names and photographs of the spouse, giving partners the right and capability to decide on matters pertinent to land use, contracting, sharecropping and other land-related decisions (Figure 4).



(**a**) (**b**)

Figure 4. Photograph showing community members after receiving a land certificate: (**a**) Female household head having her land certificate (**b**) Group of a farming community composed of female and male household heads holding their land certificate. Source: Annual Report of Amhara Regional State Land Bureau [81].

Tenure security stood second by 1447 points among the ten variables. Securing tenure allowed respondents to implement different SWC schemes, such as use of yield augmenting inputs, plant live fences along their plot boundaries, and following or maintaining proper land use plans and procedures to the extent possible. The third benefit listed most by the respondents, with a value of 1334, was the certificate-induced massive implementation of various SWC practices. Farmers invested in their plots, aspiring for erosion-free and productive farmlands. The significant proliferation of biological, physical, and mixed Soil and Water Conservation (SWC) practices throughout the study area has garnered attention

towards promoting sustainable land management. It is undeniable that, in addition to the certification program and the resulting land tenure security, there was a strong interest and urging from the Government of Ethiopia (GoE) to motivate farmers to participate in watershed development programs.

Reduced land dispute due to land certification took the fourth rank with a score of 1335. Most importantly, owning a land certificate has played a pivotal role in reducing disputes of a different nature such as trespassing, boundary dispute, farmland encroachment, abuse of fiduciary, and inheritance disputes. Certification reduced the number of person-days spent for arbitration held by the village elderly, the Kebele land administration committee, Woreda and higher courts. Better farming has ranked as the fifth benefit of the program. Further research findings on land-related disputes will be discussed on part 4.3 of the paper. Sustaining better farming practices has allowed farmers to apply proper agricultural practices such as avoiding ploughing high slope areas, planting crops suiting the agroecology, and being part of the cluster farming system were among the good agricultural practices implemented by the farmers. Respondents have potentially prevented their plots from soil degradation and improved their plots productivity. As rated by the respondents, other factors sharecropping, live fencing, extended land contracting, land plaguing, and land renting trends stood sixth, seventh, eighth, ninth and tenth (Table 5).

Table 5. Benefits of land certification as assumed by the respondents.

Benefits of Land Certification	Estimation	Number of Obs.	95 Percent	*n* = 365
	Std.	Err.		Conf.
Gender equity	1450	19.56	1412	1488
Tenure security	1447	25.58	1397	1497
Encourages SWC	1334	16.71	1301	1367
Reduces land disputes	1335	25.92	1284	1386
Better farming practice	1174	23.14	1128	1220
Promotes sharecropping	982	25.73	931.4	1033
A live fence between parcels	955	23.66	908.5	1002
Extended contractual agreement	914	25.63	863.6	964.4
Land plaguing practice	820	22.74	775.3	864.7
Better land renting trends	813	22.93	767.9	858.1

4.3. Land Certification and Land Disputes

One of the research projects aims was to measure how land certification reduces land-disputes. The research found that fifty of the 401 respondents, or 12.5 percent, reported the prevalence of land disputes around their vicinities. The rest, 351 respondents, or 87.5 percent, said there were no land-related disputes. To figure out the type of disputes common in the area, fifty respondents who answered "yes" were asked. Waterways-related disputes, spouses, boundaries, wrong interpretation of plot information, and issues related to bequests were among the most frequently happening land disputes. (Table 6).

Based on the Likert scale measurement (Table 6), land disputes between spouses scored 168 points and stood. The second on the list is the waterway or cutoff drain, with a point of 159. The place under study is known for its high slope and dissecting terrain. This, in turn, exposed the farming land to high erosion resulting from torrential rainfall during June, July and August. In these months, farmers get ready for soil erosion protection by preparing waterways around their fields and crops. Disputes related to these waterways emerged in two main areas: firstly, regarding where these structures were excavated, and secondly, concerning the direction in which the water flowed. If not managed properly, waterways can have an impact on neighboring plot owners and downstream land users. During qualitative discussions, the researcher attempted to investigate whether conflicts

over property boundaries could occur even among close relatives and neighbors. Misunderstandings about plot information and disagreements related to inheritances ranked fourth and fifth among the mentioned types of disputes.

Table 6. Prominent forms of land disputes in the area.

			(*n* = 50)		
Types of Disputes	**Std.**	**Err.**	**95 Percent**	**Conf.**	**Interval**
Spouses	168	8.423	151.1	184.9	
Waterways/cutoff drain	159	9.761	139.4	178.6	
Boundary	147	8.380	130.2	163.8	
Misinterpretation of plot information	115	6.739	101.5	128.5	
Bequest related	110	7.559	94.81	125.2	

The second question raised to the respondent was if there was a change in trends and magnitudes of land-related dispute after the certification program was due. FGDs undertaken in each of the six kebele reveal that certification has reduced land disputes arising from diverse underlying and predisposing roots. The summary of the six FGDs read as follows:

> *Since the certificate issuance, land-based disputes have shown a declining trend. However, the problem persists in lower circumstances and magnitudes than ever before. Whenever a problem arises, the disputants try to solve the problem without the involvement of third party. If they fail to agree, the disputants take the issue to village elders. If not solved yet, the village elderlies pass the case to the Kire and then to Abagars; if the problem stays unsolved, they take it to the kebele Setita committee. Again, If the disputants still do not consider the decisions of the mentioned social platforms, they bring the case to the attention of formal institutions; kebele land administration, Woreda land administration, Woreda and higher courts. One of the critical admissible pieces of evidence the plaintiff and defendant asked to show by formal and informal institution is a certificate of the land they dispute on. By doing so, the court will rule based on the admissible evidence proven. As a result of this process, land-related disputes are gradually diminishing. Therefore, the number of person-days spent as plaintiff, defendant, witnesses, and arbitrates was reduced. Such labor force to be devoted since the onset of the dispute, which is to be expressed in terms of person-days will be dedicated to various agricultural activities to be spent on either own or other off-farm activities. Besides, certain costs pertinent to the court's process, court costs, travel expenses, accommodation costs, process service, consultant payment, and witness fees will be utilized for the household needs. They conclude that land certification has played a pivotal role in reducing land disputes and helped them fully utilise the existing labor force in agricultural activities alone.*

The resolution methods followed for land disputes, as outlined by a participant in a Focus Group Discussion (FGD), are represented in Figure 5, encompassing both formal and informal institutions.

Despite the absence of a well-structured database in the courts, the research has leveraged available data for a restricted number of years as surrogate indicators to assess the ratio between all court cases and those specifically related to land matters.Land-related files from Woredas and higher courts were scrutinized for further triangulation and validation. During the study, the research got twelve and twenty years of data from three sources. We have, therefore, tried to compare the proportion of land cases with other civil and criminal cases brought before the courts (Figures 6–8). These cases exclude land related cases settled by informal mechanism as explained in Figure 5.

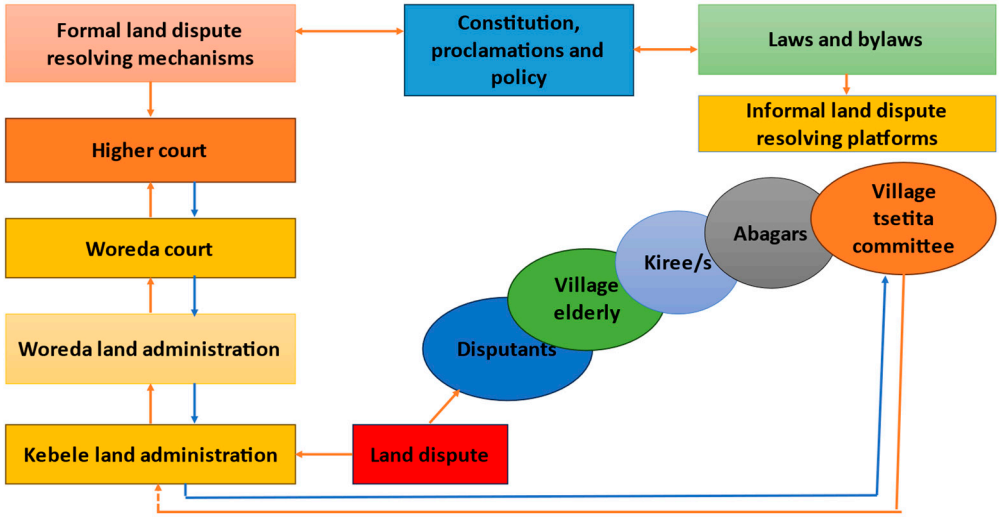
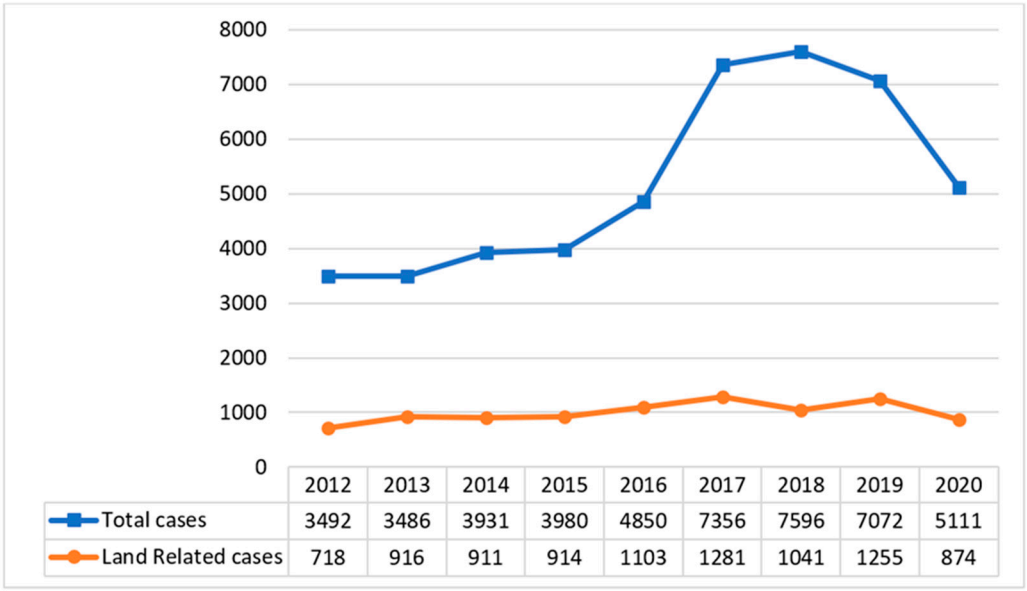


Figure 5. Diagrammatic representation of informal land dispute resolution processes in the study area.



	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total cases	3492	3486	3931	3980	4850	7356	7596	7072	5111
Land Related cases	718	916	911	914	1103	1281	1041	1255	874

Figure 6. All court files compared to land-related files, SWZ, 2012–2020. Source: SWZ higher court.

The SWZ higher court which is responsible for receiving and adjudicating cases transferred from 21 rural and two urban Woreda courts when either the plaintiff or the defendant is dissatisfied with the Woreda court's decision. Data from the database reveals that land-related cases presented to the formal court accounted for 26.2% in 2013 and 13.7% in 2018 of the total caseloads (as depicted in Figure 6). There have been fluctuations in these numbers, with 3492 cases in 2012 rising to 7072 cases in 2019. Notably, there has been a consistent upward trend from 2016 to 2019. On average, the higher court handles and resolves 20.19% of all cases that are land related. According to information from court sources, this increase can be attributed to the ongoing challenges related to peace and stability in Ethiopia over the past four years. These sources also indicate that the number of cases brought to the court has decreased since the initiation of two rounds of land certification programs.

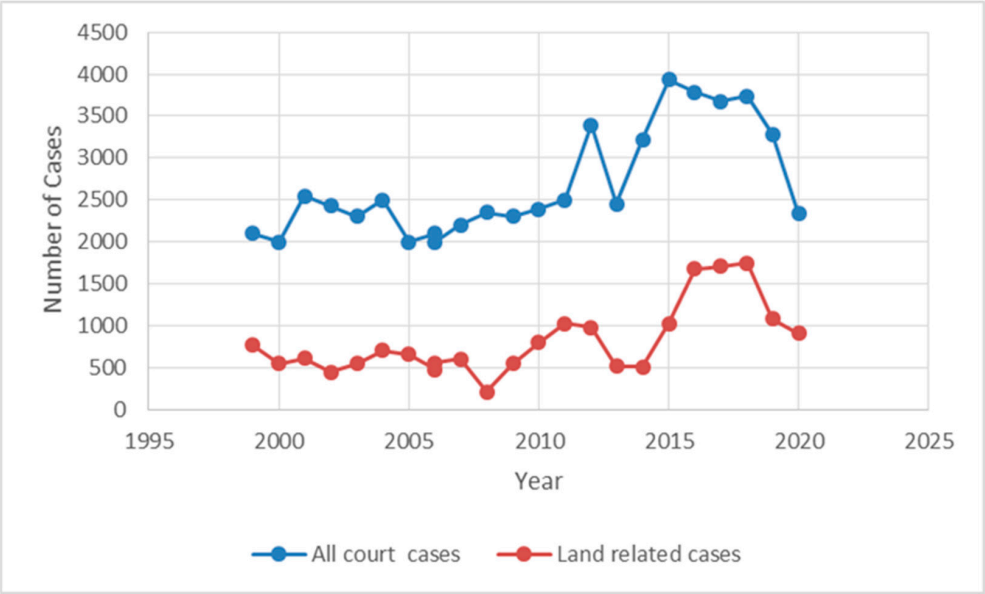


Figure 7. All court files compared to land-related files, Dessie Zuria, 2000–2020. Source: Kutaber Woreda court.

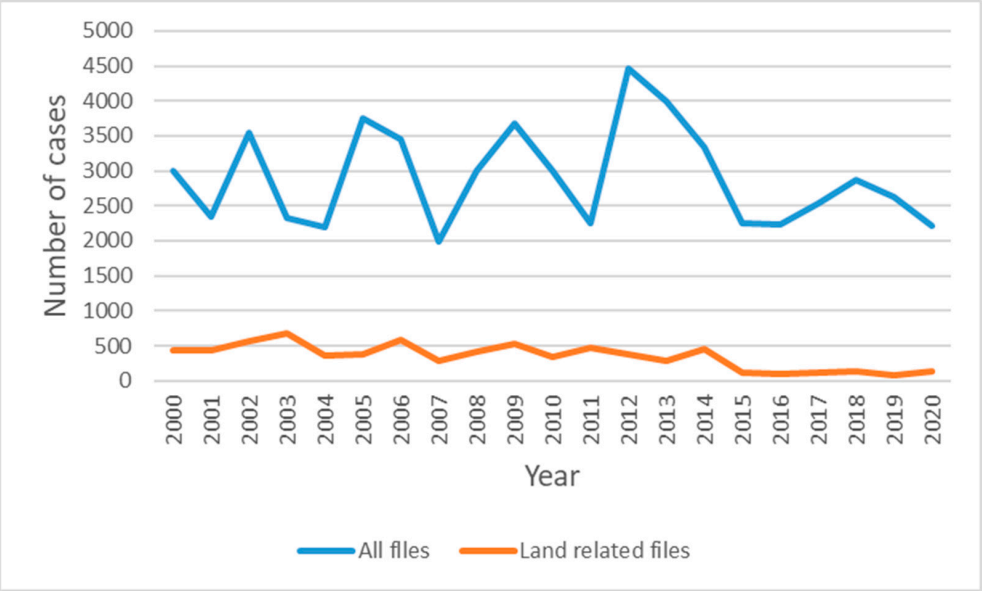


Figure 8. Comparison of all court files and land-related files, Kutaber Woreda, 2000–2020. Source: Dessie Zuria Woreda court.

Data from Dessie Zuria Woreda court spanning from 2000 to 2020 exhibits varying statistics for court cases, with 1987 in 2007 and 4456 in 2012. Concurrently, the land-related files also display fluctuations in their numbers and proportions. Specifically, there were 673 land-related files in 2003 and 84 in 2019. Based on these numbers, land-related files constituted 21.3% in 2011 and 3.2% in 2019 (as shown in Figure 7). In summary, the entirety of land-related files accounted for 11.96%, significantly lower than the proportion in the SWZ higher court, where land-related files made up 20.19% of the total [2]

Data from Kutaber Woreda court was also utilized to explore land-related dispute trends (Figure 8). The number of all of the files ranges between 1997 and 3933. The files made up 8.98 and 46.22 percent of the total cases in 2008 and 2018, respectively. These files have an average share of 29.17 percent of the entire claim. Therefore, Kutaber had

the highest land-related disputes compared to SWZ and Kutaber Woreda, which have an average incidence of 20.19 and 11.96 percent.

Disputes involving land were reported by FGD and judicial sources, and their patterns show a declining trend. The proportion of land-related matters in the two courts and the SWZ higher court supports the case. In the SWZ higher court, Kutaber and Dessie Woredas land related files made up 20, 12, and 29 percent, respectively. Additionally, FGD discussants and court-based KIIs have provided us with information on the benefits of land certification for lowering land-related disputes.

4.4. Land Certification Contribution towards SWCPs and Agricultural Productivity

Showing the link between land certification and agricultural productivity requires an exploratory investigation that embraces the opinions of the local community. Qualitative sessions were more than important and served as springboards to set up proxy indicators of agricultural productivity. To be more elaborative and franker, developing specific proxy indicators calls for further scrutinizing and showing the correlation between land certification and agricultural productivity. Hence, indicators have been found based on the opinions of KIIs and FGDs discussants (Table 7).

Table 7. Proxy indicators of tenure security and agricultural productivity.

Indicators	(*n* = 365)			
	Yes	**Percent**	**No**	**Percent**
Adoption SWC practices	270	74	104	26
Extension service	329	90.3	39	9.7
Use of insecticide and pesticide	71	19.5	323	80.6
Use of improved seed	188	51.6	194	48.4
Use of fertilizer	283.4	77.6	90	21.4

Table 7 portray that, of the 365 respondents, 270, or 74 percent, reported that they have practiced different SWC practices on their plots after receiving a land certificate knowing that the land belongs to them and can be transferred to their children after death. The incidence has contributed to the expansion of SWCPs, which improves land productivity towards better crop and livestock production. After receiving the certificate, farmers were willing to construct waterways, ditches, and bunds and decided to plant live fences across their residences and plots (Figure 9).

Furthermore, 283 or 78 percent of the respondents use agricultural extension service from the nearby *limat tabiya* (Kebele level organized development unit), which they think an essential mechanism through which meaningful information and technologies are disseminated. Government of Ethiopia has organised these schemes at Kebele or *limat tabiya* level, where Subject Matter Specialists (SMSs) are ready to consult the community in matters pertinent to crop, livestock, natural resource, land, and animal health. These five paraprofessionals will be stationed in their respective sites and continuously serve the community in their capacity. However, willingness to adopt technologies depends on how farmers accept the advice of these professionals. Of farmers who received certificates, 90 percent or 329 have used the extension services provided by their limat tabiya (Table 7). The informants said that the service enabled them to increase crop and animal output, safeguard their land from deterioration, and keep the health of their cattle.



(**a**) (**b**)

Figure 9. Different SWC practices on farm plots: (**a**) Stone bund on corn farm; and (**b**) Alley farming with legume for nitrogen fixation and soil protection. Photo credit: Annual report of SWZ Natural resource management office (SWZANRMO), (2020).

The use of insecticides and pesticides among the respondents was very insignificant. Only 19.5 percent of the respondents have reported using these inputs. Such a low performance can be attributed to the low prevalence of crop pests during the survey, the high price of these inputs in the market, and their unaffordability by the farmers. Almost half of the informants reported the use of improved seed to boost the yield of their plots (Table 7). The report of the two Agriculture offices indicates that DAP, Urea, NPS, NPK, and Bio-fertilizers were commonly utilized types of fertilizers in the area. As fertilizer prices rise from time to time, and farmers reach a decision to reduce their expenses, compost is becoming common among the farming communities of the study Woredas and elsewhere in the adjacent places. Farmers have been trained in the preparation and use of compost by development agents and SMS. The adoption of compost is seen at a variable rate as farmers take technologies indifferently and after seeing the impact on other farmers. In this respect, 33.6 percent of the respondents have replied that they are not applying compost in their fields. However, 66.4 percent of the respondents use compost at a varying scale; 37.6, 14.2, 6.5, and 8 percent use less than 500, 501–1000, 1001–2500, and above 2500 kg of at household level, respectively (Table 8). The act of applying compost can be associated with farmers' desire to safeguard their land, ultimately boosting land productivity and ensuring continuous, sustainable land use for both present and future generations.

Table 8. Trends in compost application.

(*n* = 365)		
Amount of Compost Used/Household/in kg	**Frequency**	**Percent**
Non-users	122	33.6
<500 kg	137	37.6
501–1000 kg	52	14.2
1001–2500 kg	24	6.5
>2500 kg	29	8.0
Total	365	100

Having explored the extent SWCPs and the rate of adoption of specific yield augmenting practices, we have investigated the SWZ agricultural office report on crop production trends. Crops under this consideration were teff *(Eragrostis teff)*, wheat (*Triticum vulgare*),

barley (*Hordium vulgare*), sorghum (*Sorghum bicolor*), oats (*Avena sativa*), peas (*Piscum sativum*) and bean (*Vicia faba*).

Crop yield in SWZ has shown an increase in total output since 2011 (Figure 10). Hence, crop production increased from 6.54 to 10.77 million quintals between 2011 and 2020. Stable crops such as wheat, teff, and sorghum similarly showed high yields between these years. Specifically, it was clear from the graph that the three staples, wheat, sorghum and teff, have shown 114, 12, and 114 percent yield increases in the years specified. Contrary to this, leguminous crop beans, oats and beans have not unveiled improvement in terms of yield. Most of these crops are planted internally for crop rotation and soil improvement, and most are used as stew crops, so they have low area coverage, influencing their production volume.

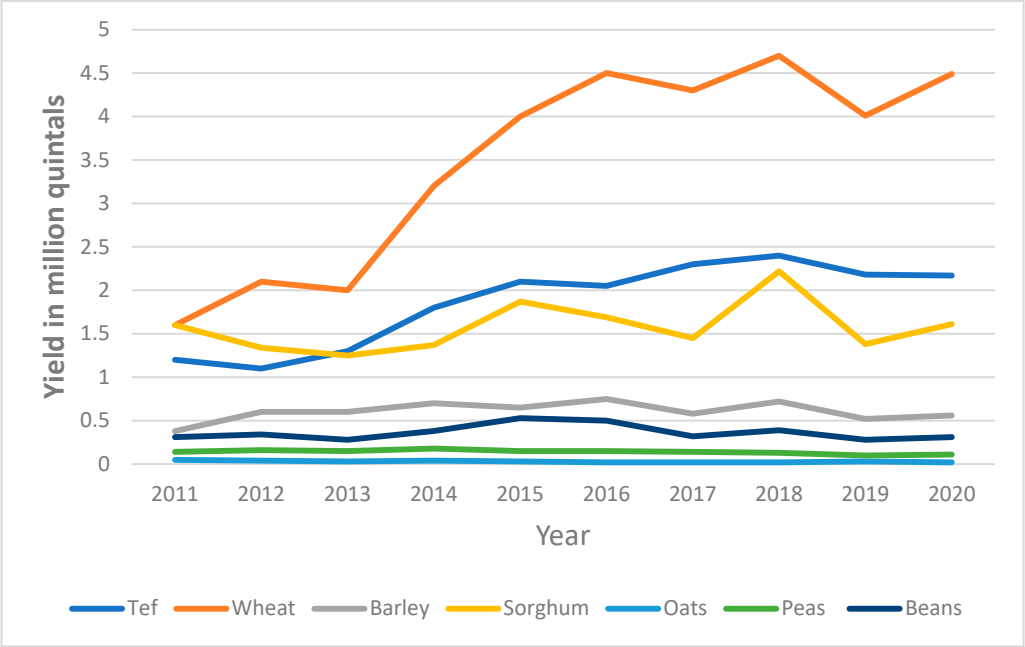


Figure 10. Crop yield by main crops, SWZ, 2011–2020. Source: SWZ Agriculture office.

Nevertheless, upward trends in agricultural productivity are closely tied to the level of security that landholders have over their land tenure and their ability to effectively manage their land. Additionally, farmers have shown a strong interest in utilizing fertilizers, compost, and improved seeds, as well as seeking guidance from development agents. However, the research has revealed several challenges that continue to hinder the sector's productivity despite increased yields. These challenges include recurring droughts, poor soil quality, limited access to agricultural inputs, a lack of credit, crop pest and disease, frost damage, unpredictable rainfall patterns, and substantial post-harvest losses. The researchers conclude that two rounds of land certification programs have empowered farmers to develop a sense of ownership, which in turn motivates them to better manage and conserve their land, enhance soil fertility, and boost agricultural production.

5. Discussion

It is to be noted that the primary aim of this research is to analyze and understand the effects of land certification on tenure security, adoption of SWC, reduction of land disputes and promotion of agricultural production. The study revealed a positive correlation between land certification and other dependent variables.

The socioeconomic characteristics of the respondents are summarized as follows. Men dominated the composition of the respondents; 80.8 percent of the total respondents were male-headed households. Leaving terms of inequality apart, having a high male population will allow the execution of labor-demanding works such as SWCPs. Numerous research studies have shown that these families, which males head, may effectively contribute to the

widespread adoption and execution of various SWCPs [82,83]. In addition, respondents have been found to have different educational backgrounds; 40, 42, and 18.4 percent were illiterate, attended primary school, and dropped out of secondary school, respectively. Briefly, 60 percent can read and write and accept and implement recent technologies, practices, and regulations from regional and federal governments.

Farmers in the study are observed making efforts to maximize their cultivation on their limited land parcels. On average, rural families in the research area possess 0.77 hectares of land. When considering national data, it becomes evident that the average landholding size per household is 0.6 hectares [84]. These small plots of land pose a challenge for farmers as they struggle to generate an adequate yield to meet the food needs of their households [85].

The government of Ethiopia and regional states have undergone two rounds land certification programs since 1998. The programs have showed many positive attributes expressed in terms of cost, low-level disagreement levels, and operation-related costs. According to Deininger et.al. [86], the quality of the certification process was figured out by the proportion of situations where disagreement could not be resolved, and certificates could not be granted, which was just 5 percent, compared to 20 percent in other titling programs [87–89]. According to Deininger et al. [90], with some modifications, this process could serve as a model for other countries to scale up the implementation of land registration quickly. Many authors have praised Ethiopia's first-level registration and certification process for its decentralized, participatory, pro-poor, low-cost, and quick approach nature [91]. Contrary to these facts, the certification processes were bottlenecked by several institutional and legal matters. Most specifically, policy and legislation gaps, technical deficiencies, capacity-related problems, lack of financial resources, and the absence of a center of excellence in land administration owe a prominent role in this regard [91].

The majority, or 92.5 percent of the studied households, have obtained certificates for their land. Additionally, 98.4 percent of households who received certificates believe that having a land certificate gave them various land rights, except for the right to sell, though FDRE constitution prevents citizens from the sale of land. In that regard, Article 40 (3) of the constitution granted Ethiopian nations, nationalities, and people's ownership right over rural land and other natural resources [92]. Correspondingly, among many variables used to measure the benefits of land certification, the program's ability to sustain gender equity, tenure security and the adoption of SWC practices stood first to third. The findings of other researchers on land certification have revealed a similar result. For instance, the low-cost land certification program widely implemented in Ethiopia's Tigray region in 1998 helped improve tenure security [89]. Along with this, a study conducted in Uganda found that land certification provides enhanced benefits for tenure security [93].

Contrary to the above findings, which postulate the positive essence of tenure security, a study by Holden and Yohannes [94] argues that tenure security may not be a requirement for investment. Although many researchers in the field forward numerous contradictory assumptions, this research revealed the positive contribution of land certification to tenure security. After the commencement of the certification programs, farmers in the survey have developed the intent to construct SWC schemes, plant trees across their borders, give lands for sharecropping, contract plots, and consider and practice land use planning communally set by user groups.

Disputes over land frequently result in adverse effects on economic, societal, environmental, and geographical aspects, particularly in developing and transitioning countries. These issues are exacerbated by the presence of fragile land market institutions, numerous opportunities for illicit transactions, and a substantial population of individuals without land ownership. Land disputes may have catastrophic impacts on people, organisations, and even entire the nations [71]. To this effect, this research tried to show the link between land certification and land-related disputes. According to the research finding, only 50 respondents, or 12.5 percent, showed that land-related disputes are common in the area. In addition, respondents revealed several forms of land disputes; disputes between spouses, especially during divorce, space used for waterways, border-related, misinterpretation of

plot information, and bequest were widespread and put in their order of occurrence as per the research's finding. Looking at the cases of three courts, the proportion of land-related disputes has constituted 20, 12, and 20 percent of the total cases for SWZ, Kutaber and Dessie Zuria, respectively. Other studies in this regard reveal a much higher figure. For instance, a survey by Adal found that 75 percent of the cases in formal courts in Ethiopia were land-related [95]. Similarly, in research carried out in Tigray, all land-related files brought to the attention of the Woreda court sum up to 1173, of which 54.2 percent and 37.7 percent were land related [96]. Besides, the low-cost land certification program widely implemented in Ethiopia's Tigray area in the late 1990s helped improve tenure security and decrease land disputes [97]. It is undeniable that, fewer land dispute cases can be linked to the commencement of tenure certification.

Farm plots can be preserved from any form of degradation that leads to poor soil fertility, and low productivity can be augmented by applying site-specific and compelling SWCPs. The research found that 74 percent of the respondents used one or a mix of SWCPs in all or either of their plots. After receiving their certificates, the KIIs and FGDs participants revealed they had built waterways, ditches, and bunds. In addition, biological practices (life fences, grass and legumes on bunds, alley farming, and grass strips), which they believed would protect their plots from soil erosion and degradation, were widespread. This further strengths the assumption of insecure tenure contributes to decreased soil fertility and land degradation [98]. Contrary to this, other research findings contradict the prevailing correlation between land certification and land management. Research done ANRS's Gedeb watershed revealed no connection between land certification and soil protection [99].

One of the main elements of this study was inquiring about the role of land certification in boosting agricultural productivity. Hence, since the commencement of the certification program, given other variables constant, agricultural production has shown upward trends. Farmers made this by implementing yield-augmenting inputs and adopting SWC practices. According to the research findings, 78 percent of respondents use artificial fertilizers such as DAP, Urea, NPS, NPK, and Bio fertilizers; 66.4 percent of them apply compost varying from less than 500 kg to more than 2500 kg. Applying organic fertilizer increases crop yield and improves soil fertility eventually by enhancing soil texture and its water-holding ability. Coupled with proper soil management practice; and technical advice obtained from SMS, a yield increase was observed between 2011 and 2022. Major crops such as wheat, teff, and sorghum have increased by 114, 12 and 114 percent. The finding of this research aligns with Vu and Guto [100], who gave importance to the tenure system, which is crucial for increasing agricultural productivity and raising food supply. Applying organic fertilizer increases crop yield and improves soil fertility overall by enhancing soil texture and water-holding capacity [101–104]. According to Tigistu [91], land tenure reform has typically improved agricultural output in Ethiopia and can offer a practical long-term solution to food security.

The fundamental premise of the argument is that farmers make investments to improve the productivity of their agricultural system when their land rights are lawfully safeguarded. Review research carried out by Alban [105] showed that 59 percent of the studied research works show a positive contribution of land certification to agricultural production.

6. Conclusions, Recommendation, and Future Research

The GoE and other national and international stakeholders have attempted for the last twenty years to materialize a land certification program which aspired to provide and intensify SLM, tenure security and improved agricultural production. This initiative has taken a solid twenty years, and the launching was undertaken by GoE from the pilot project level in some places and has been expanded to other potential regions. Though the program has faced several shortfalls, its impact in bringing intended results and demanding a limited budget could be taken as an evidence-based practice in other African countries.

The finding of this research stipulates that land certification positively affects tenure security, land management, reduction of land-related disputes, and improved agricultural

production. As a result of tenure security, farmers dare to invest in SWCPs, which improve soil fertility and pave the way for enhanced production. Additionally, the certification has reduced land disputes, which prevents farmers from devoting their labour on and off-farm activities, which were to be spent in formal and informal arbitration tasks before accreditation. In addition, financial expenditure related to specific court processes and daily subsistence allowance was reduced, and the money was devoted to the much felt needs of the household. The program has encouraged farmers to utilise agricultural inputs, improved agricultural technologies, compost, pesticide and insecticide, which are integral to smallholder farming. The practical intent to take part in cluster farming can be linked to the positive effects of land certification.

Ethiopia and its significant population depend on the land, which is the source of livelihood, food, raw materials, and export earnings. Hence, any positive intervention targeting land could have a multiplier effect on several dimensions of the economy.

The study led to the following recommendations: the concerned government and other development partners should educate the community about the value of SWCPs, modify the current, rigid land tenure policy to sustain private, public, and communal land ownerships, emphasize indigenous knowledge, increase the scope and depth of community participation, and enforce laws and bylaws. The GoE should prioritize the implementation of the cadastral system, which allows landowner to have a more precise and proper land rights and arrangements. As discussed in the previous parts of the paper, this study focuses only on data collected from six kebeles in Dessie Zuria and Kutaber Woredas. Nevertheless, the research finding can be an input for policymakers, legislators, and development practitioners.

In an ever-changing world, there is no single study that can conclusively direct us from where we are now to where we want to be. Ongoing research is essential until we have a complete grasp of and solutions for the genuine needs of communities. This research finding can serve as a spring board for further investigations aiming to bring about positive improvements in the lives and overall welfare of the local residents. Therefore, the results of this research will provide a foundational reference for policymakers, politicians, academics, and development experts working in areas of food security, land management, and land certification. To this effect, future research should explore the food security situations, determinants of food security, and coping and survival strategies employed by households in the study area.

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Data Availability Statement: Data will be made available on DANS (Data Archiving and Networking service) of the University of Twente.

Conflicts of Interest: The authors declare no conflict of interest.

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