

Politicts of Conservation Agriculture: Kasungu Rural District, Malawi

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Contents

DEDICATION	vi
List of Figures	vii
List of Maps	vii
List of Graphs	vii
List of Appendices	vii
Chapter 1 : Introduction	1
1.1 Background to Conservation Agriculture in Malawi	1
1.2 Conservation Agriculture (CA) in Malawi:	2
1.2.1 A brief explanation of the figure 1 above:	4
1.3 Problem statement and justification	5
1.4 Research objective and research question	6
1.4.1 Research objective	6
1.4.2 Research question	6
1.5 Analytical frame work	7
1.6 Relevance of the research	7
1.7 Organisation of the paper	8
Chapter 2 : Literature Review	9
2.1 Introduction	9
2.2 Factors blocking CA adoption in Southern African smallholder agriculture	9
2.3 Factors blocking CA adoption in Malawi	12
Chapter 3 : Research Methodology	19
3.1 Research Area	19
3.2. Research Methodology	21
3.2.1 Primary data (through field interviews)	21
3.2.2 Secondary Data	23
3.2.3 Data Analysis	24
3.2.4 Research ethics	24
3.2.5 Scope and Limitations	25
Chapter 4 : Findings and Discussions of the Factors Blocking CA Adoption in Malawi	27
4.1Introduction	27
4.2 Land ownership	27

4.3 Labour availability for small scale farmers for CA practice:	33
4.4 Agrarian capital to enhance CA adoption	37
4.5 Conclusion	46
Chapter 5 : Conclusion and recommendations	47
5.1 Introduction	47
5.2 Conclusion	47
5.3 Proposed solutions	47
References	51

DEDICATION

I dedicate this work to my family especially my late mother, Lyness Tembo, without her commitment I would not have reached this far. Whenever I recall her obligation on me I feel pity since she has not seen the fruits of the seed she planted on our beautiful mother earth. May her soul rest in peace. List of Tables

Table 1a: Face to face interview at Chingati Phiri Village
Table 1b: Face to face interview at Chilemba Village
Table 2a: Labour availability-face to face interview at Chingati Phiri Village
Table 2b: Labour availability-face to face interview at Chilemba Village
Table 3a: Source of Capital-face to face interview at Chingati Phiri Village
Table 3b: Source of Capital-face to face interview at Chilemba Village

List of Figures

- Figure 1: Malawi Systems of Conservation Agriculture with Complementary Practices
- Figure 2: Small Scale Farmer laying mulches in preparation for CA in the field, Chingati Phiri Village

List of Maps

Map 1: Map of Kasungu District

List of Graphs

Graph 1: Land ownership – Chingati Phiri Village Graph 2: Labour availability – Chingati Phiri Village Graph 3: Sources of Capital – Chingati Phiri Village

List of Appendices

Appendix 1: Questions Appendix 2: Respondent List-Small Scale Farmers Appendix 3: Agricultural Extension Workers Interviewed Appendix 4: Focus Group Discussion Participants at Chingati Phiri Village Appendix 5: Focus Group Discussion Participants at Chilemba Village

List of Acronyms

ACB	African Centre for Biosafety
ACT	African Conservation Tillage Network
ADD	Agricultural Development Division
ADMARC	Agricultural Development and Marketing Corporation
AEDO	Agricultural Extension Development Officer
AGRA	Alliance for Green Revolution in Africa
ASWAp	Agricultural Sector Wide Approach
СА	Conservation Agriculture
CBF	Children's Brighter Future
CDI	Clinton Development Initiative
CIAT	Centre for International Tropical Agriculture
CIMMYT	International Maize and Wheat Improvement
DADO	District Agricultural Development Officer
DAPP	Development Aid from People to People
EPA	Extension Planning Area
FAO	Food and Agricultural Organization
FGD	Focus Group Discussion
FISP	Farm Input Subsidy Programme
GoM	Government of Malawi
GDP	Gross Domestic Product
ICRAF	World Agroforestry Centre
JTI	Japan Tobacco International
NASFAM	National Smallholder Association of Malawi
NCATF	National Conservation Agriculture Task Force
NGO	Non-Governmental Organization
TLC	Total Land Care

Abstract

The objective of this study was to examine and discover the agrarian political economic factors hindering adoption of conservation agriculture in Malawi by small scale farmers. The location of the study was at Chingati-Phiri Village in Lisasadzi Extension Planning Area, Traditional Authority Kaomba and at Chilemba Village, Traditional Authority Mnyanja in Kasungu District, Central Region. The analytical frame work used was the agrarian political economy by Bernstein where qualitative analysis was mainly used for deep understanding of the issues on agrarian political economy. Though, to know the profile of the respondents, the quantitative viewpoint was used. The study interviewed 31small scale farmers' respondents from both villages and conducted 2 focus group discussions in both villages with a total of 23 participants.

It has been explored that the small scale farmers possess small land sizes because of increased population and illegal transferring of land by chiefs. They are also scared to use rented land because CA is a long term benefit technology so owners can easily take back their land. The majority of small scale farmers have inadequate capital for agricultural production since there is low labour wages, lack of jobs and capital to start business. Additionally, the technology is labour demanding due to the family labour which has no capital.

The State is extremely requested to implement the land reform arrangement so that the small scale farmers gain both access to land and land security. This will enable them adopt CA and other improved technology leading to more income. Therefore, the State is argued to use agrarian political economy perspective to know the farmers without land. There is also need for the State to be well coordinated with the Non-Governmental Organizations for appropriate exist strategy.

Relevance to Development Studies

Rainfed farming has shown to be challenging due to decrease in landholding sizes, climate change and soil infertility. The study contemplates conservation agriculture as an important choice for small scale farmers to adopt. CA conserves soil and water, increases soil fertility and saves labour. Interestingly, the study has unveiled the agrarian political economy factors hindering CA adoption in Malawi such as: Small land size and land insecurity, inadequate capital and labour demanding. Through this study, the State will put in place the delayed land reform arrangement for small scale farmers to access land which will enable them to have land security.

Keywords

Conservation Agriculture, Customary land, Agrarian political economy, adoption, labour, capital, land ownership.

Chapter 1 : Introduction

This chapter sets out the problem for this research. It presents a background to conservation agriculture in Malawi; the problem statement; a brief review of literature on the subject, justification and a brief elaboration of the theoretical framework (agrarian political economy) employed in the study.

1.1 Background to Conservation Agriculture in Malawi

Malawi is an agrarian country with the majority of the population, particularly those living in the rural areas, depending extensively on the land for their sources of livelihood. Averagely, 85% of all households are involved in one form of small scale agriculture or the other. People depend on the land for their livelihoods though the population has increased and farmers now increasingly have access to relatively smaller pieces of infertile land (Chinsinga and O'Brien 2008:17). About 15% of the people in the country live in towns. About 89% of the labour power work in agricultural development sector (Devereux 2007). Malawi gets 83% of its foreign exchange incomes, 39% of Gross Domestic Product (GDP) from agriculture sector. On the contrary, 11% of GDP comes from manufacturing sector from which 25% is from agriculture sector (Chinsinga and O'Brien 2008:17).

However, agricultural sustainability is contested since recently there has been "high cost of food and energy, climate change leading to drought and floods, water scarcity, degradation of ecosystem services and biodiversity, and financial crisis" (Kassam et al. 2009:292). Agricultural sustainability is defined as "the centre on the need to develop technologies and practices that do not have adverse effects on environmental goods and services, are accessible to and effective for farmers, and lead to improvements in food productivity" (Pretty 2008:447). Due to "low productive land and drought" most farmers in Sub Saharan Africa (SSA) starve especially in agrarian sites (Blaikie and Brookfield 1987:2). Similarly, Devereux (2007n.p), explains that agriculture in Malawi is principally 'rainfed' nevertheless, it is not dependable and erratic. This results in food insecurity in the country year in and year out. Currently, politicians, institutional leaders, policy makers, scholars and extension workers have stressed the need to come up with sustainable agricultural technologies (Ibid). Consequently, other innovations of crop production are being introduced in order to boost productivity whereas the soil and water are preserved.

For instance, conservation agriculture (CA) is one of the sustainable innovations being embraced (Nyambose and Jumbe 2013). CA is "a farming approach that fosters natural ecological processes to increase agricultural yields and sustainability by minimizing soil disturbance, maintaining good soil cover, and diversifying crop rotations and/or associations" (ACT 2012a). This includes technical ways to decrease soil erosion, keep organic matter, preserve soil moisture and soil fertility (Ibid). According to Hobbs et el. (2008), CA is defined "as minimal soil disturbance (no till) and permanent soil cover (mulch) combined with rotations, is a more sustainable cultivation system for the future than those presently practiced" (Hobbs et al. 2008). While as Ngwira et al. (2013) defines CA as "a sustainable cropping system that may help in reversing soil degradation, stabilizing and possibly increasing yields, and reducing labour time and producing a high net return" (Ngwira et al. 2013:351). "CA is based on three main principles (1) minimum soil disturbance (direct sowing of crop seeds); (2) permanent soil cover with living or dead plant material; and (3) crop rotation or association with leguminous or cash crops for family use or sale" (Ngwira et al. 2013:351). However, in Southern Africa, CA has additional inputs or cultural practices which are used like "manure, inorganic fertilizers, herbicides and timely planting as ways of managing it". Regularly, farmers utilize herbicides together with "CA package such as herbicides to control weeds in the initial years" (Ibid: 351).

1.2 Conservation Agriculture (CA) in Malawi:

CA in Malawi is defined as "an agricultural technology that integrates the three principles such as minimum soil disturbance, good coverage of the soil and crop rotations" (Government of Malawi (GoM) 2010:6). The principal preliminary point for Conservation Agriculture (CA) in Malawi is "minimum soil disturbance" which is reinforced by two ideologies at a small scale farmer level. These ideologies are "good soil cover (permanent soil cover) and crop association – rotations, intercropping or relay cropping" (Government of Malawi (GoM) 2016:19). Below are the explanations:

a) "Minimum soil disturbance": This is the central point and can not be compromised. Small scale farmers are not supposed to employ ploughing, ridging, tillage or any means which can lead to distressing the soil. However, they are allowed to put their planting materials straight to the soil if more effective planting rainfall has been received. On flat surface, farmers are supposed to use "a dibble stick or using a hoe on old ridges". Deep rooted crops to be established in shallow and stiff lands such as cow peas, pegion peas and other agroforestry species (Ibid).

- b) "Good soil cover": The main goal is to attain a nice soil coverage in both seasons, wet and dry. This is very important as: it guards the soils against rudiments, it makes full use of rainfall as evaporation and soil erosion are being reduced, it enhances the "structure, organic matter and water holding capacity" in the soil which eventually softens the soil especially in minimum tillage fields, it reduces weeds in the field, it enhances the helpful work of micro and macro fauna in the soil, and there is no loss of nutrients due to evaporation or sinking down into soil (Ibid).
- c) "Crop Association-rotations, intercropping or relay cropping":

Crop associations are very important in enhancing the health of the soil, reduction of weeds and avoid pests and diseases for example of Striga. In addition to this, household diets are also changed for the better due to these technologies. The crop choice relies on its marketability however legumes are more required. Legumes are more required because: they fix nitrogen in the soil and also they diversify nutrition in small scale farmers households (Ibid). Refer below to figure 1 on the Malawian CA arrangement and how it is maximised by other technologies:

Figure 1: *Malawi's system of Conservation Agriculture with complementary practices*



Source: GoM, NCATF, 2016:20

1.2.1 A brief explanation of the figure 1 above:

When implementing CA, there is need to think of other best farming management options to maximize output and efficiency with minimized susceptibility to the environment. The best practices that can balance with CA are: "Chemical fertilizers, improved seeds, herbicides, fodder and cover crops, soil and water conservation measures, planting methods and tools, agroforestry and natural regeneration, and organic manures" (Government of Malawi (GoM) 2016:16).

"Chemical fertilizers": "Chemical fertilizers" are significant to enhance crop yields and associated crop remains. CA is for "soil and water conservation" and not to substitute inorganic fertilizers. Though with time, the use of inorganic fertilizers decrease because of the improved fertility of the soils (Ibid).

"Improved seeds": Farmers are requested to choose and plant best crop varieties in a CA plot. This should be done for them to get more returns from CA plot (Ibid). "Herbicides": Some farmers choose "herbicides" to kill weeds in a CA plot which is "labour saving" and does not interrupt with the soil (Ibid).

"Agroforestry and natural regeneration": These are central in order to conserve the soil and increase soil fertility thereby decreasing inorganic fertilizer expenses (Ibid).

"Fodder and cover crops": "Fodder crops are vital for animal feeds while as cover crops act as the soil shelter to reduce the droplet impacts from rainfall" (Ibid).

"Soil and water conservation measures": Plant vetiver grasses in the marker ridges and construct raised foot paths in a CA field to conserve soil and water. However, storm drains be constructed inorder to direct the water (Ibid).

"Organic manure": "Livestock and made manures supplement the benefits of CA by improving the efficacy of inorganic fertilizers thereby decreasing vaporization and sinking down of nutrients, adding nutrients to the soil and reducing expenses, and reducing the undesirable results from drought and extreme rainfall". (Government of Malawi (GoM) 2016).

1.3 Problem statement and justification

According to Mloza-Banda (2005), conservation agriculture in Malawi started in 1940s, but has not been taken seriously by agricultural research and development programmes (Mloza-Banda 2005:962). Additionally, a variety of Non-Governmental Organizations (NGOs) such as Total Land Care (TLC), have been supporting farmers to adopt conservation agriculture innovations (Williams 2008). Regardless of the conservation agriculture benefits, the adoption of this innovation by farmers is still very low (Ibid). Adoption is the "degree of the use of a new technology in long run equilibrium when the farmer has full information about the new technology and its potential" (Kapalasa 2014: 341). In respect of the low uptake of CA in ()Malawi, a number of studies attempted to discover the reasons. According to Sosola et al. (n.d.), the following challenges were established as hindering the effective adoption of CA in Malawi: Firstly, "farmers are accustomed to conventional farming hence still till their land, monocrop, burn maize stover and lowly apply fertilizer" (Mloza- Banda 2002 as cited in (Sosola et al. n.d). Secondly, "stover mining" and a diverse use of "maize stover" as animal feeds accounts for the slow growth of CA. Thirdly, insufficiency of CA tools and herbicides. Generally, in Malawi, there is insufficient "jab planter, chaka hoe and other useful gears". "Organizations' such as Care Malawi, World Agroforestry Centre (ICRAF), Wellness and Agriculture for Life Advancement (WALA) and National Smallholder Association of Malawi (NASFAM) do not encourage practicing herbicides while Food and Agriculture Organisation of Malawi (FAO), TLC and Concern Universal support farmers with herbicides" (Sosola et al. n.d). Fourthly, it takes a long time for farmers to realize profits. Farmers support innovations with quick results such as "inorganic fertilizers and herbicides" and not those that take a long time to get profits (Sosola et al. n.d). Similarly, "in agroforestry, trees to enhance soil fertility, take a long time for farmers to get profits hence the feeling that it's a waste of time for them to adopt the technology" (Sosola et al. 2010). Finally, there is also the issue of the absence of vibrant guiding principles for implementing precise CA innovation. The findings indicate that stakeholders do not have vibrant ways of enhancing CA innovation that "fits particular agroecological area. CA innovations are not designed to be implemented like one-sizefits-all method. It is advisable to have CA innovations that are suitable for a particular Agro-ecological region" (Sosola et al. n.d). However, some of these reasons are not convincing such as reasons one, three and five cited above. For this reason, this research seeks to examine and discover the agrarian political economy factors shaping the low adoption of CA in Malawi.

1.4 Research objective and research question

1.4.1 Research objective

The objective of the study is to examine and discover the agrarian political-economic factors hindering adoption of conservation agriculture.

1.4.2 Research question

What agrarian political economic factors and how do they hinder the adoption of conservation agriculture in Malawi?

1.5 Analytical frame work

I suggest that there are grey policies in the promotion of conservation agriculture in the Ministry of Agriculture, Irrigation and Water Development because farmers cannot be stupid for not adopting conservation agriculture in Malawi. There are still some gaps in the literature for farmers not adopting conservation agriculture in Malawi. Therefore, I have advanced alternative explanations for farmers not to adopt conservation agriculture by employing the agrarian political economy questions by Henry Bernstein. Agrarian political economy is all about "the social relations and dynamics of production and reproduction, property and power in agrarian formations and their processes of change both historical and contemporary" (Bernstein 2010:1). The Henry Bernstein agrarian political economy questions used are: (1) "Who owns what?" (2) "Who does what?" This is about "social divisions of labour". (3) "Who gets what?" (4) "What do they do with it?" (Bernstein 2010:22-24). The above two questions 1 and 2 have assisted the researcher to know the actual agrarian political economic reasons why there is low adoption of conservation agriculture in Malawi. However, the other last two questions have also assisted to explore issues behind the political economic factors.

1.6 Relevance of the research

This research will add literature to the understanding of the agrarian political economy factors which hinder the small scale farmers from adopting conservation agriculture in Malawi. The main goal is to bring agrarian political economy factors which would assist policy makers to establish real policies on how to address the low adoption of conservation agriculture. The agrarian political economy factors will enable the delayed land reform policy to be in use as there are many idling government estates. This will provide some small scale farmers opportunity to access land. Besides this, division of labour and capital will be looked upon accordingly as to which policy can be developed for the betterment of the small scale farmers. The policies developed will be of tremendous significance for increasing the uptake of conservation agriculture amongst the small scale farmers.

1.7 Organisation of the paper

For the purpose of coherence and systematic flow of ideas, this thesis is organized in five chapters. Whilst chapter one presented the problem of the study, chapter two is literature review which critically explore the arguments and intellectual claims for conservation agriculture, chapter three discusses the methodology where a description of the tools used for gathering the data as well as the sources from which the data was obtained are described. Whilst highlighting the sources from which empirical data and information for the research is obtained, it also explains how the case study areas were chosen. Chapter four is dedicated to a critical evaluation of conservation agriculture in Malawi, and offers a critical theoretical and empirical assessment of the agrarian political economy factors hindering the effective adoption of conservation agriculture in Malawi. Chapter five concludes the study and offers some recommendations.

Chapter 2 : Literature Review

2.1 Introduction

This chapter unveils the literature which has been done by academicians and other experts on CA adoption by small scale farmers. The areas covered are CA adoption in Southern African Smallholder Agriculture and factors blocking CA adoption in Malawi where institutions and organizations are included.

2.2 Factors blocking CA adoption in Southern African smallholder agriculture

According to Andersson and D'Souza (2014), it is difficult to evaluate the literature on CA acceptance and agrarian political economic factors which block the adoption because of the three principles of CA concept which are doubtful to understand them and their importance; and economic factors such as input support, farm input subsidies, agricultural policies, market which form the acceptability of the new innovation by small scale farmers (Andersson and D'Souza 2014:122).

Currently, some of the factors blocking CA acceptability by small scale farmers in Zimbabwe and Zambia are: Firstly, inadequate and "competing uses for crop residues": studies have shown that it is difficult to retain crop residues since they have many uses such as feed for livestock especially in the dry season in Southern Africa. Secondly, labour limitations, it has been found out that there are a lot of weeds under CA which raises the demand of labour at clearing mostly where herbicides have not been applied. Thirdly, results of CA. Where the area is very wet, "mulching" will result to decreased farm produce because of the water logging. Therefore, profits to a farmer to accept it depends on "seasonality and agro-ecology" in particular. Fourthly, "mind-set" of the use of some farm tools such as the plough. To achieve minimum tillage of CA principle, there is need to stop use of the plough in tilling our fields. Therefore, there is need to change our mind-set at all levels starting from the farmer, extension worker and researchers (Andersson and D'Souza 2014:122-123).

Giller et al. (2009) says that for small scale farmers to adopt CA there is need to possess resources such as inputs (fertilizer, herbicides, seed), equipment (Jab planter, sprayer), knowledge, immediate return, availability of labour and finances (Giller et al. 2009:31). Besides this, CA can quickly be accepted by small scale farmers where there is availability of "crop residues" which can be used for mulching on the farm (ibid). Contrary to this, "if crop residues are fed to livestock after the harvest, farmers cannot adopt CA" (Arslan et al. 2014:78). "Crop residues" are also "scarce resources" which are important for mulching in the CA principle. In addition to this, availability of "herbicides and market" make farmers able to buy farm inputs hence farmers accept conservation agriculture (Giller et al. 2009:31). However, expect speed adoption of CA by small scale farmers when there is enough: "land, cash and labour". Inversely, this means that farmers without "resources" cannot accept conservation agriculture (ibid). This explains the reason why large scale farmers in Malawi and other developed countries like Australia adopt CA without problems since they have required resources. Additionally, Wall, (2007) as quoted in Giller et al. (2009) suggests that farmer sensitization on "soil degradation" issues can lead to adoption of CA. This agrees with Deininger (1999) that "in a setting, the poor will fail to get out of poverty not that they are inherently less productive or lack of the necessary skills but because of information imperfection preclude them from access to credit market" (Deininger 1999:19). This informs us that if small scale farmers don't access to resources due to lack of information, they cannot adopt CA. Therefore, small scale farmers need to be well versed of the challenge of "soil degradation" and how it can be managed through various trainings. This is where they can be trained in all CA principles and where to source scarce resources such as herbicides, seed, sprayers and all necessary requirements.

"Land size": the bigger the land size, the higher adoption of CA by farmers and vice versa. This -explains why larger scale farmers in Zambia were able to use CA on part of their land while small scale farmers could not even attempt CA since their land size was small (Arslan et al. 2013: 78). This agrees with Lipton (1977), "that poor farmers have little land and much underused family labour" (Lipton 1977:16). Consequently, most small scale farmers in developing countries do not adopt CA because they have small size of land while large scale farmers use part of their land for CA leading to high crop productivity.

"Land tenure arrangement": Chinsinga (2011) as quoted in Chinsinga et al. (2012) says "that most of the farmers in Malawi use customary land which is not secure because of the delayed land reforms" (Chinsinga et al. 2012:9). Hence small scale farmers are in doubt to use the "customary land" because CA takes a significant time to enhance soil fertility (ibid). Consequently, Borras (2007), states that "ownership or control over land resources means the effective control over the nature, pace, extent or direction of surplus production and distribution" (Borras 2007:22). Therefore, the State is required to have a quick support in conducting land reforms so that the small scale farmers are able to make use of the land without doubt whenever they want new technologies such as CA. Furthermore, with enough land farmers are able to practice all the three principles of CA such as good soil cover, minimum tillage and crop rotation/crop associations leading to high crop productivity.

FAO (2007) as quoted in Nkala (2011), says that there are a number of organizations which provide institutions for CA to be adopted in Southern Africa such as "Food and Agricultural Organization (FAO), International Maize and Wheat Improvement Centre (CIMMYT), African Conservation Tillage Network (ACT), Organization for Rural Agricultural Progress (ORAP). The funds for CA implementation was being controlled by these organizations. Additionally, the Centre for International Tropical Agriculture (CIAT) efforts to make marketing arrangement affordable by the CA small scale farmers" (Nkala et al. 2011:5523). Now this is where NIE questions SRLA since "the main players are not Statebased organizations but just projects or Non-Governmental Organizations" (Scoones 2015:49). Therefore, it is not feasible to make marketing arrangement affordable while the State is not involved politically. There is need to link the institutions at the ground (micro) to the State (Macro) as the State inclusion will make the proper marketing competition for the small scale farmers to adopt CA. Consequently, NIE through Harris (1995) says that "States exist to defend and uphold property rights...", "States matter and can effect quite dramatic institutional changes" (Harriss et al. 1995:8). Therefore, I argue that the State is supposed to be included in all developmental activities which the NGOs and other projects plan so that the farmers' property rights are protected.

In Southern Africa, farmers practicing CA increases when NGOs promote CA, but as soon as "projects" phase out all the farmers stop completely which indicates a doubt in CA "sustainability". For instance, in Zambia, when the "World Vision International (WVI), Development Aid from People to People (DAPP) and the Monze Dioceses phased out their projects in 2003, all farmers stopped implementing CA" (Nkala et al. 2011:5523). The suggested reasons for this are: Most farmers look for affordable "inputs" in organizations implementing CA and go back to the conventional farming once they are no longer supported. This means it is difficult for them to purchase the resources to succeed in CA as witnessed in Zambia. Additionally, it is not easy for small scale farmers to adopt CA from NGOs and other institutions regardless of being trained. Interestingly, only few individuals who are not in the project adopt CA (ibid). This is why NIE questions SRLA through Popkin (1979) by emphasizing that "small scale farmers make the choice which they believe will maximize their expected utility" (Popkin 1979:31). I agree with Popkin because farmers usually adopt technologies which they think will give them profit at the end. This is the reason why the small scale farmers in Malawi are poor that they cannot have a start-up capital to buy agricultural inputs hence it is not necessary to adopt it. This is in line with Nkala (2011), that CA in Southern Africa is not an innovation for farmers without capital since they cannot purchase the agricultural inputs such as herbicides or seed (Nkala et al. 2011:5523). I think CA adoption is failing because SRLA is not connecting NGOs and researchers dealing with local development to state politics (Scoones 2009:182). Consequently, NIE through North (1995) questions SRLA that the "State cannot be taken as an exogenous actor in development policy..." (North 1995:23). In my opinion, there is need to have a good exist strategy of the NGOs for the small scale farmers to adopt CA. In this regard, NGOs are supposed to work with the State (Ministry of Agriculture and all State projects) so that once NGOs phase out, the State continues supporting the farmers without changing policies leading to CA adoption.

"CA in mixed farming": "Where mulching is used CA cannot be feasible by farmers' local knowledge in a mixed farming. The reason for this is that livestock feeds on crop residues which can be used as mulch in CA plots" (Valbuena et al. 2012:183).

2.3 Factors blocking CA adoption in Malawi

CA is lowly adopted due to misunderstandings about inputs and tools: Firstly, farmers think that CA can only be accepted with the availability of inputs and farm implements. For instance, being nearer to "agro dealers", owning of "capital" and "credit" used for procuring. The examples of inputs and farm implements are: "hybrid seeds, herbicides, inorganic fertilizers, jab planters and Knapsack sprayers" (Government of Malawi (GoM) 2016:68). The mentioned issues have negatively affected CA acceptance by farmers while they just support it and that farmers can practice CA without using them. Secondly, "farmers' mind-set, farmers are used to the system of ridging and cleaning fields hence to change to CA as a new practice are afraid of other farmers" (Ibid). Thirdly, "farmers are afraid to produce a lot of legume crops like groundnuts, soya beans, pigeon peas with no market or selling at lower prices. Additionally, they are not sure of dealing away with diseases, pests and weeds in CA. Lastly, rented land is not feasible to mix the three CA principles since there is no land security by farmers" (Ibid).

Farmers are required to adopt CA innovation inorder to enhance maize productivity. CA is the field where there is no practice of soil disturbance, covering the soil with organic mulches and the maize crop is grown there. There is also application of herbicides to control weeds (Mloza-Banda 2005). Similarly, according to Kassam (2014), CA "is an agro-ecological approach to sustainable production intensification". This uses three ideologies which reinforces maize productivity in the field such as direct planting through the mulches without ridges, preservation of soil cover with "crop Stover's" and green manure and crop rotations or crop associations (Kassam et al. 2014). This leads to CA profitability like improves organic matter, penetration of water, increases soil fertility, enhanced soil structure, decreases soil erosion, minimizes crop diseases and enhances maize yield (Giller et al. 2009) as quoted in (Sosola et al. n.d). However, according to Sosola et al. (n.d.), challenges are faced when implementing CA. Firstly, "farmers are accustomed to conventional farming hence still till their land, monocrop, burn maize stover and lowly apply fertilizer" (Mloza- Banda 2002) as quoted in (Sosola et al. n.d). According to Sololá et al (2010) as quoted in Sololá et al(n.d.), it was found that only 5% of the land by farmers demonstrating CA was being apportioned to CA demonstration and farmers narrated that crop production practices are "inter-generational" since they learnt the practices when they were children from elders. In this regard "the norms and values of best fit farmers farming techniques have been entrenched". Secondly, "stover mining" and a diverse use of "maize stover like animal feeds". As one of the principles of CA is good soil cover, it is required to get "stovers" from another farmers' field since "maize stover" from CA are always not enough to cover the whole field as required.

Most of the "maize stovers" are eaten by uncontrolled livestock soon after harvest and sometimes burned by mice seekers. "Stovers are also used for fire wood, sterilizing tobacco nurseries and building shelters". This drives farmers to have their demonstration gardens on CA nearer the house for close observation. As a result, to multiply farmers practicing CA becomes a challenge. Thirdly, insufficiency of CA tools and herbicides. Generally, in Malawi, "there is insufficient jab planter, chaka hoe and other useful gears. Care Malawi, World Agroforestry Centre, Wellness and Agriculture for Life Advancement and National Smallholder Association of Malawi do not encourage practicing herbicides while Food and Agriculture Organisation, Total Land Care and Concern Universal support farmers with herbicides" (Sosola et al n.d). It was also found that "farmers wept due to high herbicide costs and lack of herbicides on their market places" (Ibid). Fourthly, it takes a long time for farmers to realize profits. Farmers support innovations with quick results such as inorganic fertilizers and herbicides and not those that take a long time to get profits (Sosola et al. n.d). Similarly, in "agroforestry, trees to enhance soil fertility, take a long time for farmers to get profits hence it's a misuse of time for them to adopt the technology" (Sosola et al. 2010). Finally, absence of vibrant guiding principles for implementing precise CA innovation. The findings indicate that stakeholders do not have vibrant ways of enhancing CA innovation that "fits particular agro-ecological area". CA innovations are not designed to be implemented like "one-size-fits-all" method. It is advisable to have CA innovations that are suitable for a particular Agro-ecological region (Sosola et al. n.d). Whereas Ngwira et al (2014), found out that "casual labours, size of land, number of farmers in an organization, the district staff and time farmers actively participated in CA innovation made farmers to accept and enlarge their hectarage on CA innovation" (Ngwira et al. 2014). According to ACT (2012), there is a gradual increase of conservation agriculture "adoption" however it is still low besides a variety of creativeness to promote it. This situation is more worsened because of some "CA principles which are in conflict with livestock needs like soil surface cover and small number of legumes to be used in crop rotation" (ACT 2012b). And also that the "majority of the small scale farmers do not change their mind set from conventional farming system to conservation agriculture since they have inadequate knowledge and skills" (ACT 2012b). According to Lwesya (2004) as quoted in Nyambose and Jumbe (2013), explains that availability of information from extension workers and institutions to access credit can influence or depress the farmers from accepting any agricultural technology. This is because if farmers are not aware of the credit or agricultural technology it is likely that they cannot adopt it. Whereas Mbendera (2006) as quoted in Nyambose and Jumbe (2013), says that the means of production such as land is one of the deciding factors for a new innovation to be adopted (Nyambose and Jumbe 2013). This is supported by Ellis (1993) that for small scale farmers to earn their living depends on the means of production such as land, farm inputs like fertilizer, seeds, farm tools like hoes, ploughs. In addition to this how do they control their production. Small scale farmers also reject or resist to accept the new technologies or grow improved varieties of crops if the state is not supporting them with start-up capital, crop prices due to capitalistic or exploitative mind of the state (Bernstein 2008:432-433). Similarly, Patel et al. (2015) found out that small scale farmers do not adopt the new technologies because they lack the means of production. This was demonstrated when some households moved from the Southern region to the Northern region of Malawi in search for land and after they upgraded the land through agroeclogical approach it was taken back by the chief. This also applied to widows after upgrading their land, they were grabbed by the relatives of the husbands (Patel et al. 2015:37). Similarly, on a survey conducted in Ekwendeni in Northern Malawi about 94% of the field in agricultural work was done by women in Malawi while men did only 82%. This shows that most of the agricultural work in Malawi is done by women. However, women do not own land in the Northern Malawi due to patriarchal system (Patel et al. 2015:33). This is in line with what FAO (2011) found that 60% to 80% of the agricultural work is done by women in developing countries (FAO 2011:12). It has also been found out that adoption of new innovations is a challenge since small scale farmers lack information on these innovations in Malawi. This is because in Malawi the agricultural extension service is lowly supported financially by the State and about 40% of the required extension workers are on the ground. Despite that the extension service is lowly supported, most funds go to Farm Input Subsidy (FISP) implementation for the establishment of legitimacy by the State (Patel et al. 2015:28). According to O'laughlin et al (2013), "there is rural poverty across the Southern Africa region due to low wage labour opportunities relative to population size hence few households are supported than in the past leading to small scale farmers facing

challenges as they have very low finances to purchase farm inputs like fertilizers, herbicides, sprayers". However, States support large scale farmers unlike small scale farmers in countries like Malawi and Mozambique (O'laughlin et al. 2013:4). It has also been found that tenure insecurity impedes small scale farmers from accepting "soil conservation measures" such as conservation agriculture in Malawi. However, these technologies have the possibility to enhance the forthcoming output. The demotivation originates from the danger of not farming on the same piece of land and lack of inheritance due to gender biasness in villages with the diverse inheritance arrangement (Lovo 2016:226). And the African Centre for Biosafety (ACB) says "high input prices are a key limiting factor in the adoption technologies, while as low output prices are the products of structural disadvantages and adverse incorporation of small scale farmers into liberalized global market which leads to lack of market" (African Centre for Biosafety (ACB) 2014:22).

2.4 The Institution and Organizations:

According to Harriss (1995), institutions "are the rules of the game of society, or, more formally, are the human devised constraints that structure human interaction while as organizations are the players: groups of individuals bound by a common purpose to achieve objective such as political bodies, economic bodies and social bodies" (Harriss et al. 1995:23). The institutions such as policies should provide conducive situation for more profits to small scale farmers who practice CA. Therefore, these institutions can promote CA if they are supported by organizations hence there is need to have such organizations (ibid:25). Due to this, Mloza-Banda and Nanthambwe (2010) suggest that some of the Malawi government policies to be put into consideration. They suggest that there should be connection between the small scale farmers' interventions and the macro level including all agricultural extension agents for CA to be adopted. For instance, maize production in Malawi is being supported through Farm Input Subsidy Programme (FISP) and other agricultural projects hence calling for the CA technology to be supported in the same way. Additionally, Malawi is involving CA in agricultural policies and plans as shown in Agricultural Sector Wide Approach (ASWAp) under "Sustainable land Management", however the incorporation of CA principles into land resources conservation policy and plans is greatly required (Mloza-Banda and Nanthambwe S.J. 2010:80). This will make CA to be fully understood starting from the Managers, Agricultural Extension Workers as well as farmers through the annual, quarterly and monthly CA and FISP stakeholders' meetings i.e. micro to macro.

Deininger (1999) says that "experience suggests that, in the absence of technical support during the start-up phase and without access to markets for finance and outputs, the sustainability of newly initiated land reform settlements will be limited" (Deininger 1999:16). Similarly, if Agricultural extension workers, small scale farmers are not trained technically, there can be no or limited uptake of CA. Due to this FAO (2010) seeks training of Agricultural extension workers, small scale farmers and all managers on CA so that their "knowledge and skills" are increased. Lead farmer extension approach to be greatly considered as this is one way of supporting extension at grass root level (FAO 2010:4). Based on my opinion, if small scale farmers are well trained on CA, it is easy to spread the adoption of the technology since farmers copy from each other, more importantly if benefits are seen.

Besides farmers and agricultural officers' trainings, "Malawi ensures that CA should be taught in all schools (primary and secondary) and colleges such as Bunda College of Agriculture and Natural Resources College. Also that the farmers should be trained in adult literacy classes" (Mloza-Banda and Nanthambwe 2010:82). This will assist small scale farmers to have good understanding of CA hence promoting adoption of this technology.

"Land tenure systems": In Malawi and other Southern African Countries CA acceptance is hindered by the "land tenure system" since most of the small scale farmers farm on "customary land" which lacks security due to delayed "land reforms". As substantial time is essential to enhance "soil fertility" under CA, it is very difficult to adopt CA due to lack of land security. It has also been found out that most of the female small scale farmers in Malawi don't adopt CA since they don't own land (Chinsinga et al. 2012). Due to this FAO (2010), calls for the Malawi Government and other Southern African Countries to encourage the small scale farmers adopt CA through revision of "land tenure arrangements" (FAO 2010:4). This will allow enabling environment for farmers to adopt the CA since they will have all the freedom to use the land. This will enhance 'income' for poor farmers (Lipton 2009:25).

Small scale farmers in Malawi have no or very small land sizes due to increased population (Peters and Kambewa 2006:2) and difficult for them to purchase "agrochemicals" due to lack of capital (Chinsinga et al. 2012). For good agricultural intensification, "there should be an enabling condition through good policies and markets to support small scale farmers access inputs which can be important for CA adoption. Furthermore, in Malawi, farm input subsidy provision to small scale farmers tend to be very selective on crop choice" (Valbuena et al. 2012:183). Hence agricultural intensification cannot rely on one crop as Malawi subsidy is biased towards maize which is a staple crop. Besides this, to have suitable policies and market for small scale farmers, there is need to connect them from micro level to macro level which is the State (Scoones 2015:38-42) which SRLA does not do (Scoones 2009:182). It is the State which can provide suitable guidance to the micro level to have the required inputs such as chemical fertilizer, land allocation, improved and resistant varieties of crops for agricultural intensification.

Chapter 3 : Research Methodology

3.1 Research Area

The research study was conducted in two villages, Chingati Phiri and Chilemba in Traditional Authority Kaomba and Mnyanja respectively.

Chingati Phiri village is in Traditional Authority Kaomba, in Lisasadzi Extension Planning Area (EPA), 30 kilometres from Kasungu district town. Chilemba village is in Traditional Authority Mnyanja, in Kaluluma Extension Planning Area, 40 Kilometres from Kasungu district town. These Extension Planning Areas belong to Kasungu District Agricultural Development Office which is in Kasungu Agricultural Development Division in Central Region of Malawi.

Chingati Phiri and Chilemba villages were chosen to know their insights since they are of different tribes Chewa and Ngoni respectively. Additionally, the Village Heads and the people in these villages are very cooperative. The Non-Governmental Organizations (NGOs) selected these villages because of their cooperation demonstrated, besides the proximity to Extension Planning Areas and the main road (O'Leary 2014: 190).

These Extension Planning Areas were selected because there were Non-Governmental Organizations (NGO) which were promoting conservation agriculture in previous years (ibid: 190). These NGOs were Total Land Care (TLC), Alliance for Green Revolution in Africa (AGRA), Flanders International Cooperation Agency-Food and Agricultural Organization (FICA-FAO), World Agroforestry Centre, Children's Brighter Future (CBF), Care Malawi, Clinton Development Initiative (CDI), Women in Agriculture (WIA), National Smallholder Association of Malawi (NASFAM) and the Ministry of Agriculture, Irrigation and Water Development. In these study areas, there are small scale farmers who practice CA and other do not. Since the research aimed at analysing the agrarian political-economic factors hindering the adoption of conservation agriculture (CA), there was a need to conduct the study where the activity is taking or previously took place hence selecting the areas. To find the study sites, the Programme Manager (PM) for Kasungu Agricultural Development Division (KADD) directed the researcher to the District Agricultural Development Officer (DADO) for guidance. With the support from the Agricultural Extension Development Coordinator (AEDC), the District Agricultural Development Officer (DADO) allocated us to Lisasadzi and Kaluluma EPAs. Refer Map 1. below to the Map of Kasungu District showing study villages.



Map 1. Map of Kasungu District: - Source: Land Resource Department, Malawi

3.2. Research Methodology

3.2.1 Primary data (through field interviews)

To know the agrarian political-economic factors which hinder farmers from adopting conservation agriculture, field study visits were planned to Lisasadzi and Kaluluma Extension Planning Areas (EPA). The field visits to collect data actually took place for three weeks from 13th July to 3rd August, 2016. Semi structured interviews and focus group discussions (FGDs) were conducted to small scale farmers. The first semi structured interviews were conducted to 16 respondents in Lisasadzi Extension Planning Area, Chingati Phiri Village. Later FGDs with 11 participants in Lisasadzi EPA, where precisely done at Lisasadzi Residential Training Centre (RTC). In the same manner, the semi structured interviews were conducted to 15 respondents and FGDs with 12 participants in Kaluluma Extension Planning Area, Chilemba Village. Subsequently, semi structured interviews were conducted to 13 Agricultural Extension Officers as key informants. These were conducted to 11 Extension Workers (Frontline staff), the District Land Resources Conservation Officer (DLRCO) and the Chief Land Resources Conservation Officer (CLRCO). Respondents from small scale farmers were 'purposely' targeted as they were from farmers' groups practicing CA. Likewise Agricultural Extension Officers were 'purposely' selected as they are implementing CA in their sections (O'Leary 2014: 190).

FGDs assisted the researcher to get wider data on the agrarian political economic factors blocking small scale farmers from adopting CA. The researcher was also able to know how these factors block small scale farmers from adopting CA through pushing follow up questions. FGD is a collaborative study with a group of about 6 to 12 people hence it ensures a researcher to get more suitable data that cannot be obtained from a single person. It takes care of gender and age dynamics to avoid domination of individuals during discussions (Laws et al. 2003:298). It is also an important technique since it saves time as it can be finished within less time (Ibid:298). Apart from this, the discussion may bring sensitive and reasonable issues than an individual interview. Even though, the group discussion makes the facilitator unable to manage the group (Kvale and Brinkmann 2009:150). To triangulate the data collected from small scale farmers, key informants like government officials such as extension workers were interviewed using semi structured interview (face to face). Besides this, the focus group discussions (FGDs) were of great assistance in triangulating the information gathered from face to face small scale farmer interviews. During all the semi structured interviews and both FGDs, pictures were taken using the camera and a cell phone, and also interviews were well recorded.

To identify the informants, the District Agricultural Development Officer provided the cell phone contacts of the Agricultural Extension Development Coordinators (AEDCs) for direct communication. The Agricultural Extension Development Coordinators selected all the Agricultural Extension Workers involved in CA implementation to be interviewed. In turn the Agricultural Extension Workers identified the small scale farmer respondents to be interviewed and participate in FGDs. The Agricultural Extension Worker interviews were conducted at the Agricultural Extension Development Coordinators' office and others in their respective sections. Whereas, the interviews for District Land Resource Conservation Officer and Chief Land Resource Conservation Officer were conducted in their respective offices at Kasungu District and Kasungu Agricultural Development Division offices. The FGDs in Lisasadzi and Kaluluma EPAs were conducted at Lisasadzi RTC and Chilemba Village respectively. All these were achieved after proper communicating to them through telephone and electronic messages. In addition to this, the Programme Manager assisted the researcher with two Research Assistants to assist in data collection, photo taking, interview recording and other translation for respondents to understand the questions. The photo taking and interview recording were taken through the permission granted from the respondents. Both Research Assistants were fully briefed on the purposes of the study and all the questions.

As the face to face interview questions were open ended, it provided in-depth and inclusive ideas since the interaction was being guided by follow up questions or probing. The questions asked on agrarian political economy to small scale farmers respondents were based on: Firstly, understanding of CA by small scale farmers such as why small scale farmers practice CA. Secondly, production process of CA such as (1) "who own and control the land? This has assisted to know if the small scale farmers owned the land for production, if not and if by customary, how strong is the control of their land? How are they secured? Why do they think they are secured? This mostly dwells on how land as a means of production is divided amongst the small scale farmers. It is also of profound importance to know why do poor small scale farmers do not have the purchasing power to buy farm inputs such as fertilizer, seeds, herbicides, sprayers (2) "Who does what?" This is about social divisions of labour. This has unveiled the activities done by various small scale farmers. For example, others do specific works within the area like some are land lords, women who combine production, reproduction and community works, civil servants but also farming and others are small scale farmers. This has assisted the researcher to know the class to which each group belongs for instance some may belong to capitalist farmers who exploit other farmers, middle farmers, poor farmers who depend on capitalist farmers for their survival and landless farmers who sale their labour (3) "Who gets what?" This explains how the "income is socially divided amongst the peasant farmers". Also why the social income is socially divided (4) "What do they do with it?" This has assisted to find out about social relations of production, reproduction and accumulation. This last question is about how diverse 'social relations' of 'production' and 'reproduction' regulates the distributions and use of the 'social product' (Bernstein 2010:22-24). Also the researcher has been able to know why and how this happens. The first two questions have assisted the researcher to know the actual agrarian political economic reasons why small scale farmers are not accepting conservation agriculture in Malawi. However, the other last two questions have also assisted to unveil issues behind the agrarian political economic factors.

The type of the data that has been collected is the agrarian political economy like ownership of property, control of the land, security of the land, income distribution, labour, Marketing of farm produce in relation to implementation of conservation agriculture. The interviews of this study focused on respondent's thoughts, perceptions and narrative construction of events on conservation agriculture.

3.2.2 Secondary Data

Initially, the secondary data was gathered by going through various studies of scholars at International, Regional and Local levels. The secondary data collected was based on the current academic literature on the adoption of CA in all the regions. This data was collected to be aware of the comparable studies that have been conducted previously so that gaps are known to be filled or to confirm other theories. Furthermore, Malawi Government documents like Guide to Agricultural Production (GAP), Land Use and Management Study, National Conservation Agriculture Task Force guidelines, Malawi News Papers and Land Resources and Conservation reports for the ADD were reviewed. The main focus was on the understanding of the debates and notions of Conservation Agriculture (CA) adoption and customary land use amongst small scale farmers. Customary land is all about land held, occupied or used by community members under customary law (held by a group as a whole, usually administered by a traditional leader on behalf of the community) (United States Agency International Development (USAID) 2016: n.p).

3.2.3 Data Analysis

The initial data scrutiny started during secondary data collection as it guided on how to frame the research questions. As the primary data collection was in progress, I had to modify the way of asking questions since some respondents were not conversant with them. Also follow up questions assisted deeply in understanding the issues. This analysis of data while in gathering process encouraged the researcher to select the second study site in Kaluluma Extension Planning Area to compare the responses of the first study site in Lisasadzi Extension Planning Area. Besides this, assisted the researcher to prepare special questions for the focus group discussions. Finally, a thorough analysis was done at the end of data collection. Therefore, a qualitative analysis to know the content and a quantitative where a descriptive data analysis was done by the use of Statistical Package for Social Sciences (SPSS). To come up with quantitative information, the data gathered was coded, entered and then analysed. Using this, was able to draw tables, come up with frequencies, and graphs drawn. In quantitative figures, the researcher was interested to know the profile of the respondents.

3.2.4 Research ethics

The research was conducted in a transparency, confidentiality and respectful manner. The main reasons for the research were well explained to all the influential stakeholders, participants and respondents such as the Traditional Authority/chiefs, the Programme Manager, District Agricultural Development Officer, Agricultural Extension Development Officers, the Agricultural Extension Development Coordinators and small scale farmers. For example, all the respondents were free to choose when to be interviewed and also whether to be taken a photo, interview recorded or not. Due to this, the research studies on both sites were successful.

3.2.5 Scope and Limitations

The risks and challenges of carrying out the study were: Inadequate finances, untimely turn up of the participants especially for focus group discussions. Also other respondents could not come at the agreed place timely. This agrees with O'Leary (2014:59-60).

Inadequate finances: It was not easy to keep the participants without refreshments during focus group discussions (FGDs) in both study sites. The FGDs could take more than two hours at each site due to probing questions. This prompted the researcher to source some finances from the Kasungu Agricultural Development Division management to purchase the refreshment for the participants in both study sites. The management also deployed the vehicle for the researcher and two research assistants to use since Lisasadzi and Kaluluma Extension Planning Areas are very far from the duty station. To be honest, the management assisted the researcher because previously he worked with Kasungu Agricultural Development Division. However, the researcher had to use public transport to interview some respondents since the management did not provide enough finances to purchase fuel.

Postponement of the interview dates: Some dates were being postponed by some respondents due to official duties in their respective offices. This was mainly done by Agricultural Extension Workers of Lisasadzi EPA and focus group discussions of Kaluluma EPA. However, it was achieved through proper arrangement in different dates with them.

Blackouts / power cuts: Blackouts or power cuts were persistently experienced by Electricity Supply Commission of Malawi (ESCOM) due to shortage of water in Shire river. This made the researcher to work at night when there was the availability of electricity. Consequently, data entry and production of the first draft of the research paper was delayed. Interviewing Senior Agricultural Officers: It was difficult to get the data/ information from some Senior Officers because they thought the researcher already had the answers as a result they were throwing the questions back to him. However, the researcher defended himself by not responding it instead probing more on the responses provided to get wider ideas from them. This supported the researcher to avoid prejudice.
Chapter 4 : Findings and Discussions of the Factors Blocking CA Adoption in Malawi

4.1Introduction

This chapter presents the findings and discussions on agrarian political economic factors hindering CA adoption in Malawi from the study conducted in Chingati Phiri Village in Lisasadzi Extension Planning Area and Chilemba Village in Kaluluma Extension Planning Area, in Traditional Authorities Kaomba and M'nyanja respectively. In collecting the data on agrarian political economic factors which blocks CA acceptance by small scale farmers, the emphasis was on the agrarian production process such as land ownership, labour availability and capital. In the discussion, the literature which were already explored by other academicians and experts in chapter two has been referred to in order to compare the findings. In addition to this, the researcher in other circumstances has also put his own views.

4.2 Land ownership

During face to face interview, 88% (14 out 16) of small scale farmers' respondents said that land is owned by farmers themselves and also the majority of the participants during focus group discussions (FGDs) said that land is owned by the small scale farmers themselves. By small scale farmers, it means those farmers with not more than 2 hectares of cultivated land or are described as those whose technical knowhow is very low and that they depend on family labour in order to produce for their household sustenance (Bernstein 2010:4). In particular, in Kaluluma Extension Planning Area, in Chilemba village, land is claimed to be owned by farmers where decisions over land are done by husbands even though most of the farming activities are done by women (Interview). However, the small scale farmers land sizes are smaller hence others opt for rented land in cash payment which is expensive. Rent in cash is "the fund that the leaseholder pays to the landlord (owner of the land) for the freedom to access the land for production" (Ellis 1993:55). The fund of rent refers to "the expenses that farmers are supposed to pay to other farmers such as the landowners. Another example can also be the State when it is demanding an amount of money such as taxes in kind or money" (Bernstein 2010:21). The amount varies according to how competitive land is or

how much the farmer produces from the land. This is very capitalistic arrangement (Ellis 1993:55). For instance, 1 hectare is rented at 150 USD which is very expensive to small scale farmers in Malawi (Interview). In addition to this, other farmers access the land through share cropping during the harvest period which is also known as cash in kind. Share cropping is "a practice whereby land owners lease land and sometimes provide instrument of labour in return of a portion of a crop grown" (Bernstein 2010:128). Farmers rent land on estates which are idling such as Press Agriculture Limited (PAL) estates, Kasungu Flue Cured Tobacco Authority (KFCTA) and other estates belonging to individuals. The rented land is owned by a land lord. The small scale farmers claim that they fully control the land as was inherited from their parents after the Traditional Authority allocated to them. "I have my own land and I control myself as was inherited from parents" (interviewee 13/07/2016). However, most of the fields are very small, consequently, this makes them to have limited freedom to practice CA technology on it. In contrary, the rented land is controlled by the landlord where small scale farmers are scared to practice CA on it. The small scale farmers argued that cannot implement CA on a rented land because there is no land security, land can easily be taken back by the land lord since the technology is a long term benefit. For instance, it can take 3 to 5 years for small scale farmers start benefiting from CA. "The rented land 2.4 hectares can easily be taken back by Kasungu Flue Cured Tobacco Authority; many small scale farmers are renting the land there" (Interviewee 13/07/2016). This was in line with the majority of the Agricultural Extension Development Officers (AEDOs) interviewed. However, it was contrary from the Chief Land Resource Conservation Officer where he indicated that land is owned by the State which has more control over it through Chiefs. The State just delegated the chiefs to distribute land to the people which means the land still is owned by the State. "Farmers have got no security over land since it is being controlled by Traditional Authority/ Chiefs" (Interviewee 19/07/2016). This corresponds with Peters (2010) that "chiefs are trustees of knowledge, about land transfers and settlers of disputes over land but also to ensure more accountability by formalizing the system of land administration" (Peters 2010:193).

On land security, a majority of small scale farmers on both semi structured interviews and FGDs in both study areas showed that their land was completely safe from any grab. They claimed that the land safety comes due to the fact that Traditional Authority (TA) allocated to their fore fathers hence no one can grab it. They added that since the land is secured there is no any interference in CA implementation. Inversely, the rented land has got no safety as it belongs to landlords who at any time can take it back. For this reason, small scale farmers cannot practice CA on this land. There is contradiction on customary land security, as Chief Land Resources Conservation Officer face to face interviews revealed that there is limited land security since customary land belongs to the State. As a result, the State has the mandate to use when required. Now, my supposition is that small scale farmers do not have the knowledge about the land deals in Malawi hence the State can any time surprise them by grabbing the land. I suggest this is due to land reform delays as Chinsinga et al. (2012) calls.

The massive mainstream of land in Malawi is legally taken as customary tenure. However, as chiefs allocate land to farmers, it is assumed as if land is under the villagers or family control (Peters 2002:164). This is in line with the thoughts of the small scale farmers in the study areas that land is owned by the small scale farmers (interview). However, small scale famers cultivate on smaller land sizes hence they look for rented land on idling estates or individual small scale farmers. They have small land sizes because "most of the land was transferred to medium scale farmers who are on paid jobs outside agriculture. Majority of these medium scale farmers live in urban areas and were provided land by Traditional Authorities under customary land intended for small scale farmers" (Anseeuw et al. 2016:16). In most cases, the Traditional Authorities were unlawfully selling the customary land to the 'outsiders' like medium scale farmers (United States Agency International Development (USAID) 2016: n.p). Medium scale farmers are farmers who cultivate on land ranging from 5 hectares to 50 hectares (Anseeuw et al. 2016:2). Besides the transferring of the land to medium scale farmers, the other reason is an increased "population" in rural and urban areas leading to an increased need for food creating the pressure on land (United States Agency International Development(USAID) 2016: n. p), (Peters and Kambewa 2002:2). Nevertheless, land is not supposed to be on sale or rent as other chiefs and landholders do since it is under customary law (Peters 2002:177).

Consequently, it has been found that once small scale farmers are on rented land due to land scarcity, cannot implement CA afraid of being grabbed later by the owners as they don't control rented land. According to Bernstein (2010:28), "most land holders rent land on a commercial basis and for commercial purposes: to invest in commodity production inorder to make profits and accumulate". This is the reason why majority of the small scale farmers fail to rent land as the rates are not affordable for them on cash basis. As a result, some access land through sharecropping while others are usually in casual labour. This makes these farmers to be exploited since very little is given to them at harvest as share cropping while those on casual labour do not have time to work on their land.

Additionally, farmers take a long time to have benefits from CA technology hence some farmers do not take it important (Interview). This is in line with the findings of Lovo (2016) that "tenure insecurity" demotivates acceptance of soil conservation measures such as conservation agriculture in Malawi. Lovo continues by saying that the demotivation originates from the danger of not farming on the same piece of land and lack of inheritance due to gender biasness in villages with the diverse inheritance arrangement. Similarly, Patel (2015) found that when some households moved from the Southern region to the Northern region of Malawi in search for land and after they upgraded the land through "agroeclogical approach" it was taken back by the chief. This also applied to widows after upgrading their land, they were grabbed by the relatives of the husbands. This is the reason why the possession of the land is the trajectory for increased production on the farm (Borras 2007:22). While according to Chinsinga et al. (2012), in Malawi CA adoption is low because of the delayed "land reform" as most of the small scale farmers use customary land which do not have security. In addition to this, according to Arslan et al (2013), CA adoption rate increases if the farmers land is bigger and vice versa. For example, in Zambia the small scale farmers could not go for CA because their land sizes were small while large scale farmers could implement CA due to availability of their land (Arslan et al 2013). In Malawi land is really a scarce resource, out of 2.4 million farm households in rural areas, 11% have got no land while 75% of the farm households have fields between 0.2 Ha and 2 Ha (July-Larsen and Mvula 2007:6). These poor small scale farmers have little land sizes and much under used family labour (Lipton 1977:116). Due to this, from my observation as an Agricultural Extension Officer, some sell their surplus labour on casual (ganyu) basis hence they are always on hunger since they do not have enough time to work in their small fields.

Personally, I agree with Borras (2007), that land is vital for increased production that is why small scale farmers without land in Malawi do not adopt other technologies that needs ownership and control of land such as CA. Furthermore, Chinsinga (2012) and Arslan (2013) are in agreement that small scale farmers do not adopt CA on the small size customary land. The moment farmers opt for rented land, CA is not adopted as it is a long term benefit technology and afraid of being grabbed land before enjoying the benefits. And also rented land are not practicable for all CA principles due to lack of security. Due to this, most small scale farmers make the choice which they believe will maximize their expected utility (Popkin 1979:31).

It seems small scale farmers have no knowledge that the land is controlled by the State through Traditional Authorities (Chiefs). This is evidenced by the Customary land bill which has recently been passed in the Malawi Parliament to devolve the powers to the land holders (small scale farmers) on a fee (The Dairy Times 2016:1-3). Therefore, I agree with Peters (2002) that the land is still under customary tenure (Peters 2002:164). However, the small scale farmers are not aware of it even though Chiefs have authority to construct roads or any building in their fields (Interview). This is mainly because in Malawi now, 'customary land' is taken as a household belonging. This is basically attributed by continually using and exchanging of land between small scale farmers in the households (Peters 2010:193). This land insecurity demotivates the small scale farmers to implement CA in the country. It is also very surprising since there are other idling estates in the country while small scale farmers have small pieces of land or not at all. I suggest that the perpetuity of the land insecurity issue is due to the delay of the land reform as Chinsinga et al. (2012) calls. "Land reform" is designed at transferring the land to small scale farmers without land so that full output is enhanced in the community (Berge et al. 2014:62). While as Borras defines it as "the net transfer of wealth and power from the landed to landless and land poor classes" (Borras 2007:21). He further elucidated it as the restructuring of land possession from "large private land owners" to small scale farmers and people who practice farming but they do not have land (ibid). According to my knowledge as an agricultural officer in Malawi, most small scale farmers do have small land sizes while other agricultural workers are landless. Therefore, it is worthy to conduct "land reform"

so that small scale farmers should have an effective control on their land for selfdecision making.

Refer to table 1a & 1b and graph 1 below showing who own and control the land:

Chingati Phiri Village face to face interview in Lisasadzi EPA

ITEM	FREQUENCY	PERCENTAG	REMARK
		Е	
Farmer	14	87.5	Farmers do not know that the land is under customary law because they are inheriting from their fore fathers.
Parents	1	6.2	
Chiefs	1	6.2	
Total	16	100	





Graph 1: Land ownership-Chingati Phiri Village

ITEM	FREQUENCY	PERCENTAGE	REMARK
Farmer	13	86.7	Usually controlled by husbands
Parents	1	6.7	
Chiefs	1	6.7	
Total	15	100	

Chilemba Village face to face interview in Kaluluma EPA

Table 1b: Chilemba Village face to face interview

Source: From the captured data from the study

4.3 Labour availability for small scale farmers for CA practice:

Labour is achieved by individuals who have made a bond or association for the aim of increased productivity of an enterprise on the farm (Ellis 1993:48). In this study, it has been found out that the majority of the small scale farmer respondents during face to face interview (over 75%) and the majority of the participants of the FGDs said that the family labour is commonly used amongst them because they do not have money. By family labour means fields that "the household is owning and managing itself" (Bernstein 2010:93). "We cultivate or work on our own in the crop fields because we do not have money" (Interviewee 15/07/2016). As a result, it is difficult to accept CA practice since requires a reasonable labour to carry the mulches used to cover the field. Additionally, small scale farmers said that they put into practice CA only a portion of their land because of labour issues on how to carry crop residues to be used as mulches on the field (interview).

However, a few small scale farmers hire labour in kind and cash. Labour in kind is where the hired individuals are given food, clothes or seed for planting while as other hired individuals are given money (interview). This class of farmers practice CA more than the one that uses family labour (ibid). Besides the labour stated above, other farmers use communal labour where the owner of the field brews beer for people to drink soon after the work. Consequently, makes the small scale farmers have fun at the end where they share different ideas and dance. This is equivalent to ceremonial fund which refers to as "the allocation of the products of labour to activities that create and recreate the cultures and social relations of farming communities, for example, rituals performed in preparation for cultivation and festivities after harvest" (Bernstein 2010:20). And also some farmers use casual labour mostly during peak periods leading to poor farmers selling their labour hence cannot adopt CA since do not concentrate on their farms (Interview). According to my experience, these are the small scale farmers who stay in food scarcity throughout the year as they do not have enough time to work on their own fields. Refer to the table and graph below showing source of labour in a household.

In addition to the above, the majority of the participants on both FGDs and the respondents on semi-structured interviews expounded that mice hunters burn crop residues. Consequently, small scale farmers experienced problems where to get the crop residues to be used as mulch for good soil cover in CA fields. Besides this, they face problems in levelling the holes dug by mice hunters (Interview). Therefore, farmers are deterred to implement CA since crop residues are labour demanding to be transported from other fields which are at distant places. In addition to this, according to Chief Land Resource Conservation Officer, there is no policy on CA hence it is very difficult to give penalty on those burning crop residues (Interviewee 19/07/2016). Small scale CA farmers are not protected by law hence most of them do not accept CA. According to Andersson and D'Souza (2014) in Zambia and Zimbabwe, labour restricts small scale farmers from practicing CA. This is because of high labour demand during the removal of weeds from the garden where herbicides have not been used. In addition to this, a lot of labour is required when transporting crop residues to act as mulches to the new garden (Andersson and D'Souza 2014). This is in line with what the majority of the respondents explained in Lisasadzi and Kaluluma Extension Planning Areas that they usually used family labour due to lack of funds. This is a cause of "selfexploitation". "Self-exploitation" is the situation whereby small scale farmers use family labour in their fields without considering "labour cost" (Bernstein 2010:94). The high labour demanding in carrying crop residues to be used as ground cover as a CA principle, prevents small scale farmers to use the whole garden with CA instead just a portion of the garden is used for CA (interview). However, few farmers hire labour which is insignificant stating it since the majority of them have got no resources. Additionally, others use casual labour during peak periods hence leading to very poor farmers selling their labour and not concentrating on CA activities in their fields (Interview). In Malawi casual labour is referred to as "Ganyu". Due to this, small scale farmers end up being in food shortage year in, year out. In this regard, as an experienced Agricultural Extension Field Manager, I totally agree with both views that high labour demanding blocks small scale farmers from accepting CA technology. Refer to figure 2 below on CA field:



Fig2: Small scale farmer laying mulches in preparation for CA in the field, Chingati Phiri Village in Lisasadzi EPA

In Malawi, a number of small scale farmers hardly access inputs like herbicides for CA in order to suppress weeds in the crop field. The alternative way is to make use of crop residues for good cover crop. However, they still face challenges to access these crop residues.

Sosola et al. (n.d) in Malawi found out that people who hunt mice burn the mulches while Valbuena et al. (2012) in Zimbabwe, and Andersson and D'Souza (2014) in Zambia and Zimbabwe found out that livestock destroy crop residues soon after harvest. Both of these resulted to deterrence of small scale farmers to accept CA as Arslan et al. (2014) in Zambia. In the same way, according to Giller et al (2009) in Zambia, CA innovation is speedy taken up by small scale farmers in handiness of crop residues for good soil cover. Additionally, Giller et al. says that small scale farmers should expect quick uptake of CA when there is enough labour (Giller 2009). This implies that farmers without resources cannot accept CA. Likewise, this study has established that mice hunters burn crop residues, livestock feeds on crop residues and that crop residues are used to sterilize tobacco nursery beds. Furthermore, mice hunters dig holes in the fields which small scale farmers find problematic to use the field for cultivation. This makes the crop residues very scarce hence the small scale farmers were unable to pursue with CA technology (Interview). Surprisingly, there are no laws by Chiefs to deal with mice

hunters and owners of livestock destroying crop residues for CA in Malawi. Therefore, I am in agreement with Arslan et al. (2014) in Zambia and Zimbabwe, and Giller et al. in Zambia that in the absence of crop residues for mulch in the field and lack of labour, CA expertise cannot be accepted.

Chingati Phiri Village face to face interview in Lisasadzi EPA

ITEM	FREQUENCY	PERCENTAGE	REMARK
Family labour	12	75	Done by majority of farmers
Hired labour	2	12.5	
Communal labour	1	6.2	
No response	1	6.2	
Total	6	100	

Table 2a: Labour availability-face to face interview



Graph 2: Labour availability – Chingati Phiri Village

ITEM	FREQUENCY	PERCENTAGE	REMARK
Family labour	14	93.3	Done by majority of farmers
Other	1	6.7	
Total	15	100	

Chilemba Village small scale farmer face to face interview

Table 2b: Labour availability- Small scale farmer face to face interviewSource: From the captured data from the study

4.4 Agrarian capital to enhance CA adoption

Capital is the means of production, that can be used to start a business such as land, tools, machines, inputs like fertilizers or herbicides which is important to come up with a "new value" inorder to have more proceeds on an asset (Bernstein 2010:25). For instance, in Malawi small scale farmers use inputs (improved seeds, fertilizers, herbicides), land, labour as capital so that they realize more incomes from maize and other enterprises.

Small scale farmers in Malawi face problems in finding out capital for farming activities hence leading to low embrace of CA. According to the findings in the two study areas, the majority of the farmers interviewed narrated that they find capital to purchase inputs through crop and livestock sales. "We sell crop produce, scones/cakes, and go for casual labour to find money for buying farm inputs like fertilizer, herbicides" (Interview 13/07/2016). The examples of crops which are sold are tobacco, maize, soya beans, ground nuts, and examples of livestock which are being sold are poultry, goats, pigs. The finances realized from these enterprises are not enough to purchase farm inputs like inorganic fertilizers, herbicides and improved seeds since most of the livestock and crop produce are sold to vendors at a very low prices. Due to this, small scale farmers cannot afford to buy inputs used to maximize CA such as herbicides, seeds and inorganic fertilizers hence low adoption of CA (Interview). Besides this, these inputs are found in towns very far from where small scale farmers are located, so it is very expensive for them to transport inputs to the fields in the villages. Others do not access inputs as they are expensive, for example each 50 kg bag of inorganic fertilizer ranges from USD 43 to USD 53, 1 litre of herbicides (round up) was at 28 USD and the total amount required for 1 hectare was 220 USD hence farmers could not purchase it (Interview). In addition to herbicides, for it to be used effectively, the sprayer is prerequisite, most of the small scale farmers do not have it. Therefore, small scale farmers who did not have sprayers used to hire it at 3 USD per day. "We hire each sprayer at 3 USD per day" (interviewee 21/07/2016). According to the Chief Land Resources Conservation Officer for Kasungu Agricultural Development Division (KADD), explained that besides herbicides, sprayers, in organic fertilizers, seed, implements like Jab planters, Rippers (palabana - ripper plant and palabana sub soiler) are very crucial for Conservation Agriculture (CA). However, are not available in Malawi while in the neighboring countries like Zambia and Zimbabwe are commonly found. Small scale farmers cannot manage procuring these implements outside the country as they already have limited capital. As a result of all these challenges experienced, small scale farmers are impeded to accept CA.

Farm Input Subsidy Programme (FISP): Very few farmers benefit coupons for maize seed, inorganic fertilizers, legume seeds from Farm Input Subsidy Programme every year. Additionally, inputs such as herbicides are not part of the farm input package for the beneficiaries. Therefore, farmers willing to implement CA procure herbicides on their own which is not easy since they are expensive. Apart from this, a small number of farmers practicing CA benefits from subsidized farm inputs such as inorganic fertilizers and improved seeds. Besides this, some few farmers look for casual labour which in Malawi is known as 'ganyu'. *"We do casual labour for us to find money to buy fertilizers" (Interviewee 14/07/2016).* This demotivates farmers from accepting CA technology.

Other small scale farmers find capital through loans from Non-Governmental Organizations such as Japan Tobacco International (JTI). Additionally, in the previous year's farmers could also get start-up capital from organizations such as Flanders International Corporation Agency- Food and Agricultural Organizations (FICA-FAO), Total Land Care (TLC), Clinton Development Initiative (CDI) and Alliance for Green Revolution in Africa (AGRA). Now, most of the farmers who were benefiting inputs (herbicides, inorganic fertilizers, sprayer) from these organizations have dis adopted CA because they cannot afford to purchase the inputs on their own (Interview). However, the farmers who get loans from Japan Tobacco International do not graduate since the interest rates are very high hence once they find a profit, herbicides purchase for CA is not a priority instead maize is bought for food (Interview). Besides this, other small scale farmers embark into small scale businesses like selling of African cakes, selling reused clothes and joining village banks where they borrow money periodically.

Selling of cakes: Very few farmers depend on selling cakes to find capital for the purchasing of farm inputs. Selling of cakes are not reliable since most of them are being bought by children who usually do not have money. This makes these farmers find very little money which cannot be used to purchase the inputs for CA implementation in particular (Interview).

Selling reused clothes: In Malawi, many people residing closer to towns are selling reused clothes as business hence it's not marketable and is seasonal. It is seasonal because most people like buying clothes are also selling their farm produce at time of harvest. Very few small scale farmers depend on reused clothes to find capital for purchasing farm inputs. This is because most of them also do not have a start-up capital for embarking into a reused clothes business (Interview).

Building houses for cash: Very few small scale farmers have built houses for rent. The rental fee for each house ranges from 33 USD to 70 USD for small scale farmers (Interview 15/07/2016). This supports them with cash to buy inputs for CA implementation. These are the small scale farmers who hire labour to work in their fields through "sharecropping", "casual labour" and even "permanent". "Sharecropping" is where all the farming activities are done and once harvesting has been done half or part of the produce is given to the worker (Bernstein 2010:5).

Generally, there is low income from most small scale businesses hence what has been realized goes straight to purchasing of food maize and not farm inputs such as herbicides for CA implementation (interview).

In terms of support from relatives, majority of the respondents said that they have the relatives who are on job however, they were not supporting them since they receive very low labour wages. "We have relatives who are on job in Lilongwe, Blantyre and Kasungu but they do not assist us" (Interviewee 13/07/2016). The other few small scale farmers have relatives who are on job and get assisted on farming activities including CA. 'I have children who are on job and they purchase inputs for me, so since I have revealed do not stop supporting me with Farm Input Subsidies such as fertilizer" (Interviewee 13/07/2016).

Small scale farmers in Malawi started selling their farm produce (maize, Groundnuts, soya beans, sunflower) to Agricultural Development and Marketing Corporation (ADMARC) since independence in 1964 (interview). However, according to both small scale farmers semi-structured interviews conducted in the two study areas of Lisasadzi and Kaluluma Extension Planning Areas (EPA), over 80% of the respondents said that the farm produce is sold to the vendors. Similarly, the majority of the participants of the FGDs said that most of the crop and livestock enterprises are sold to vendors. "It is difficult to buy farm inputs because profits are not realized from farm produce as they are sold to vendors" (Interviewee 21/08/2016). Additionally, very few farmers this year have sold their farm produce to Agricultural Development and Marketing Corporation due to delays in purchasing the farm produce from them. This is in agreement with Extension Workers responses that small scale farmers sell their farm produce to vendors and Agricultural Development and Marketing Corporation (ADMARC), however, there are no profits realized to add on capital to purchase inorganic fertilizers, herbicides. The majority of respondents elucidated that most of the farm produce are sold to vendors because it is the only market available to them where they can sell their farm enterprises. Small scale farmers visit vendors to sell the farm produce and also vendors visit them at their farm gate. However, this year few farmers sold their farm enterprises to ADMARC and NASFAM which was unpredictable. In addition to this, ADMARC and NASFAM are also located very far from small scale farmers. Even though farm enterprises are sold to vendors, the only disenchantment is that they purchase at very low prices hence no net income was realized (Interview). This is because of the "trade liberalization" as a result vendors dictate prices of the commodities instead of small scale farmers themselves coming up with prices (Chinele 2016: n.p). Additionally, vendors use fake scales and also farm produce are not processed for value addition to fetch good prices (Interview).

As a result of low net income or no net income, small scale farmers prioritize to purchase food maize rather than inputs which maximizes CA like herbicides, in organic fertilizers, sprayers, legumes seed like mucuna, pigeon peas (Interview).

Conservation Agriculture cannot be implemented without capital in Southern Africa since it is difficult for small scale farmers to acquire the inputs such as herbicides, improved seeds or in organic fertilizers (Nkala 2011:5523). Similarly, Chinsinga et al. (2012) found that small scale farmers in Malawi fail to procure inputs due to scarcity of capital. Likewise, if there is no access to market for funds, do not expect continuity of the innovation such as CA (Deininger 1999:16). This is in line with what the majority of the participants expounded that farmers' capital is dependent on crop sales which do not provide enough capital to acquire inputs like herbicides or improved seeds. The farm produce sold to vendors at low prices hence not enough income is obtained which limits practicing of CA as they cannot have required inputs (Interview). Additionally, farmers do not obtain enough net income because of fake scales from vendors and also low farm produce realized in the year (interview). This agrees with African Centre for Biosafety (ACB), that in Malawi there is an increased input prices which are crucial restrictive issues in the uptake of innovations, whereas decrease "of productivity prices are the products of structural disadvantages and adverse incorporation of small scale farmers into liberalized global market" (African Centre for Biosafety (ACB) 2014:22). I suggest that the input prices are high because of the State taxes the small scale farmers "indirectly through farm inputs as small scale farmer taxation" (Ellis 1993 56). By "small scale farmer taxation means the process by which the State extracts part of the small scale farmers product for administrative reasons since they are rarely taxed directly on their net income" (ibid). This is really surprising because both input prices and output prices are put in place by the State itself. This shows that the State practices capitalism on small scale farmers where it accumulates resources for its administrative arrangement. Therefore, it is difficult for small scale farmers to get capital to buy inputs in order to practice improved technologies such as CA in Malawi.

The majority of the respondents said that farmers also depend on Farm Input Subsidy Programme (FISP) as a start-up capital, however very few farmers benefit from it (Interview). Furthermore, according to Chief Land Resources Conservation Officer, inputs such as herbicides are not included in the Farm Input Subsidy Programme package and some CA farmers usually are not part of CA beneficiary (Interview). Inversely, it has been found out that Malawi Farm Input Subsidy Programme is maize crop selective (Valbuena et al. 2012:183). Besides this, most of the finances located to the Ministry of Agriculture, Irrigation and Water Development are used for Farm Input Subsidy Programme implementation. This is chiefly for State legitimacy (Patel et al. 2015:28). In this respect, I agree with the findings since all have bad implications on CA adoption. The State chooses maize as it does not want to lose popularity since it's the main staple crop in Malawi. However, a lot of funds are used for few non CA farmers while few resources support extension services on agricultural activities including CA implementation (ibid). According to my knowledge as an agricultural manager in Malawi, CA is viable in a lot of crops not only maize which is being biased. It appears that the State is not targeting CA evidenced by not including herbicides in the Farm Input Subsidy Programme packages. In this circumstance, small scale farmers cannot prioritize CA notion.

Non-Governmental Organizations (NGOs) motivate small scale farmers through farm input support when implementing CA. This was demonstrated in Zambia when they adopted CA after being provided with inputs like herbicides, in organic fertilizers and sprayers. However, after the NGO/project phased out, all farmers discontinued the CA practice (Nkala et al. 2011 5523). Similarly, according to key informants (extension workers) and some respondents, it has also been found out that most of the small scale farmers who were being supported by NGOs/Projects with inputs dis adopted practicing CA after phasing out of the projects (interview). The other situation, is that other small scale farmers were getting loan from Japan Tobacco International to grow tobacco and they purchased maize food instead of inputs for CA. These farmers are not graduating from getting loans. (Interview). I suggest that is the distinctive situation in Southern Africa including Malawi since majority of the small scale farmers are poor. They are not capable of purchasing inputs on their own especially if the initial farmer selection was poor. This is the reason why the Government of Malawi through the National Conservation Agriculture Task Force (2016) indicates that small scale farmers contemplate that possession of "capital and credit" for acquiring inputs is the only way to let them accept CA technology in Malawi.

Also, some small scale farmers are not being supported with inputs on CA innovation by the relatives who were on job because their labour wages are very low. This is in line with what O'laughlin et al. (2013) found across Southern Africa region. In addition to this, Peters (2002) says that poverty in Malawi increases due to decrease in "real wages, lack of jobs" and lack of capital to start a business (Peters 2002:176) and also fail to purchase agrochemicals due lack of capital (Chinsinga et al. 2012) . Similarly, Charman, comments on that this country "commands that farming and other savings in small scale farmers precisely offer the key track in order to ease poverty. However, most small scale farmers lack financial and asset resources and are fixed in a rural economy that is based on small land sizes producing subsistence and cash crops. Besides this, there is little formal industry, service sectors or mining to produce alternative employment for the small scale farmers" (Charman n.d:85). As a result, small scale farmers have no sources where to get income and be able to purchase CA inputs. Therefore, small scale farmers can hardly adopt CA technology in this situation.

Lack of entrée to market for funds and productivity cannot lead to continuity of improved technology (Deininger 1999:16). Correspondingly, the study has revealed that as the small scale farmers sell the farm produce to vendors due to lack of markets, it is problematic to find enough net income which can be used to invest in CA technology. The farm produce is sold at very low prices as prices are dictated by the vendors (Interview). Vendors are not banned from purchasing outputs from farmers because of the "liberalized trade policy" in Malawi since 1994 (Chinele 2016: n.p). In addition to this, few farmers this year have sold the farm produce to Agricultural Development and Marketing Corporation (ADMARC) which is a Government Institutional Marketing company in Malawi. However, this institution delays to purchase the farm produce as they want them to reach required moisture content. This institution does this so that if outputs are bought can be kept for more than two years in the warehouses (ibid). Consequently, farmers take the risk of selling to the vendors (Interview). Also as the distance to these institutions are not practicable to some farmers, the marketability of farm produce was being hindered. Subsequently, advancement of CA technology is blocked. Therefore, these findings are in line with Deininger call (1999) that availability of good market for farm produce can lead to continuity of a new technology. Furthermore, according to Bernstein (2008:432-433), the central reason why small scale farmers reject new technologies is when the State does not support them with start-up capital. In this regard, I support the findings that low or no income from the farm produce sales avert promotion of CA in Malawi. Refer to the table 3a & b and graph 3 below showing ways how small scale farmers source capital for farming:

ITEM	FREQUENCY	PERCENTAGE	REMARK
Building houses for cash	3	18.8	
Selling crop produce	7	43.8	
Selling African Cakes	1	6.2	
Loan from farmers' organi- zation	1	6.2	
Selling reused clothes	1	6.2	
Village banks	3	18.7	
Total	16	100	

Chingati Phiri Village face to face interview in Lisasadzi EPA

Table 3a: Source of capital- face to face interview



Graph 3: Sources of Capital- Chingati Phiri Village

Cimemba vinage face to face interview in Kaluluma EFA	Chilemba	Village	face to	face	interview	in	Kaluluma	EPA
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ITEM	FREQUENCY	PERCENTAGE	REMARK
Building houses for cash	2	13.3	Rare cases
Selling crop produce	9	60	Majority of farmers
Selling African Cakes	1	6.7	
Loan from farmers' organization	2	13.3	
Borrowing from Village banks	1	6.7	
Total	15	100	

Table 3b: Sources of capital- face to face interviewSource: From captured data from the study

4.5 Conclusion

In concluding this chapter, the research reiterates the fact that almost none of the factors often cited in the literature as constraining the effective adoption of CA actually amounts for the low uptake of the technology. Instead, agrarian political economy factors such as land ownership, access to and use of farm lands and capital broadly account for reasons why there is relatively low adoption of CA in Malawi. The debates on CA adoption used the literature from Southern African Smallholder CA adoption, literature in Malawi on agrarian political economy by Peters and Patel and the current Malawi news by Malawi Parliament on customary land bills. However, the researcher's views were also used in certain cases. This guided the researcher to find the reality on how CA adoption is hindered in Malawi.

Chapter 5 : Conclusion and recommendations

5.1 Introduction

This chapter highlights the research findings and isolate issues. Additionally, solutions to the isolated issues from the results are proposed for proper implementation of conservation agriculture in Malawi.

5.2 Conclusion

Firstly, the study has unveiled that small scale farmers possess small land sizes es under customary land with no security since the land is owned and controlled by chiefs as State trustees. They have small land sizes because most of land envisioned for them, chiefs illegally transferred to medium scale farmers. In addition to this, there is an increased population in both rural and urban areas leading to land pressure. It has also been exposed that small scale farmers are scared to practice CA on rented land because owners usually take back their land when benefits are being realized.

Secondly, majority of the small scale farmers have inadequate capital or finances to purchase and transport inputs. This is because of low labour wages, lack of jobs and capital to start business.

Finally, there is high labour demanding of the CA technology especially to the small scale farmers in the initial stage. This is attributed to the family labour which has no capital as earlier alluded.

Therefore, lack of land ownership, high labour demanding of CA practice and lack of capital hinder small scale farmers to practice CA in Malawi.

5.3 Proposed solutions

As it has been explored and concluded that the agrarian political economy factors, lack of land ownership, high labour demanding and lack of capital impede small scale farmers to practice CA in Malawi. The following strategies have been suggested for the State and all stakeholders to follow:

Firstly, land ownership which is a very contentious means of production in Malawi since it belongs to the State due to customary law while the small scale farmers are not aware of it. Furthermore, the shortage of land prompts these farmers to go for rented land which lacks security. For instance, most small scale farmers rent land in the idling estates where there is no security. In addition to this, other government estates remain idle because small scale farmers are not allowed to rent on them. Therefore, there is need for the State to sensitize all the stakeholders including the small scale farmers on customary land and implement land reform. Sensitization will make small scale farmers aware of what customary land is. While as land reform will enable the landless small scale farmers to access land and hence almost all of them will have land with guaranteed security. The access to land and land security will enable farmers' safe implementation of improved technologies such as CA leading to them earning more income as Lipton (1977) voices. This is the main reason why Food and Agriculture Organization (FAO) (2010) requests the Malawian Government and other Southern African countries to inspire the small scale farmers accept CA through amendment of land tenure arrangement.

Secondly, family labour is widely used in Malawi due to lack of finances. Therefore, there is need to explore modern CA practices for effective utilization of family labour.

Thirdly, it has been found out that capital is accessed through Farm Input Subsidy Programme and NGOs. However, Farm Input Subsidy Programme lacks CA package such as herbicides which is highly required to be included in the package. In this regard, the State should consider to include CA inputs package on Farm Input Subsidy Programme such as herbicides which is a requirement. Besides this, most of the small scale farmers dis adopt once the NGOs have phased out. Therefore, for proper exit strategy of the NGOs, coordination is a prerequisite between the NGOs supporting small scale farmers and the State for continuity of CA technology implementation as supported by North (1995). The State is also asked to allocate NGOs in focal areas to support small scale farmers in accessing CA inputs in collaboration with the State.

Fourthly, the study has established that the inputs are very expensive for small scale farmers to purchase as they depend on cash sales from crop and livestock. On this, the State should ensure that the inputs are universally subsidized for small scale farmers to manage to pay for them and implement CA rather than indirect exploiting them through raising the farm inputs. Additionally, farm inputs are found in distant places away from small scale farmers hence there is need for the State to ensure recommended inputs are made available to farmers timely through recognized institutions like Agricultural Development and Marketing Corporation (ADMARC).

Lastly, the burning and destruction of crop residues by mice hunters and livestock respectively, are very detrimental to CA promotion. In this regard, the Traditional Authorities (chiefs) should institute bye-law regulations on how crop residues can be protected. For example, there should be regulation on livestock grazing and movement in CA catchment area and no burning of crop residues by mice seekers to allow for residue accumulation. In addition to this, the State should institute a CA policy governing its implementation.

In brief, the agrarian political economic factors which have been explored and the solutions proposed are the lenses to be used by various stakeholders in CA promotion in Malawi. Therefore, it is my call to the State to involve all the stakeholders on CA implementation to enhance food security in Malawi.

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Appendices

Appendix 1: Questions

(1) Individual farmer questions on CA

Proposed Interview guide

The interview instrument for data collection for the thesis in partial fulfilment of the requirements for the Masters of Arts Degree in Development Studies at the International Institute of Social Studies of Erasmus University, Rotterdam the Netherlands. The topic of this research is Politics of Conservation Agriculture in Malawi. The study is strictly for academic purpose. Information obtained from the research shall be used for academic purpose.

A) Address for individual farmer

Name of organization	(Club)	
0		_

Organization Address _____

Name of farmer Interviewed

Contact Number

B) Background of the farmer

1. Age Range:

(a) 20 – 30 (b) 31- 40 (c) 41- 50 (d) 51- above

- 2. Gender:
 - (a) Male (b) Female
- 3. Educational Status:

(a)High school Certificate (b) Bachelor's Degree (c) Master's Degree (d) Professional certificate

- 4. Occupation:
 - (a) Civil Servant () b. Extension Worker (c) AEDC (d) SMS (e) Small

Scale Frame (f) Estate farmer

(g)Other please specify _____

C) Understanding of CA by farmers

- 1.0 Have you ever heard of Conservation Agriculture?
- 2.0 If yes, from where?
- 3.0 If no, why?
- 4.0 Why do you practice CA?
- 5.0 Why have you never adopted CA?
- 6.0 What challenges do you encounter in practicing CA?
- 7.0 How do these challenges/factors encounter or facilitate practicing CA?

D) Production process of CA

- 8.0 Who own and control the land? Why?
- 9.0 How strong is your control over the land? Why?
- 10.0 How secure is the land? Why?
- 11.0 How do you access farm inputs? Why?
- 12.0 Where do you sell your farm produce? Do you get profits? Why?
- 12.0 How do you acquire farm inputs to improve your crop productivity? why?
- 13.0 How do you find capital for your farming activities? Why?
- 14.0 By what means do you work/cultivate on your farm? Why?
- 15.0 Do you have relatives working somewhere?
- 16.0 Which organizations provide CA support/ messages? How is their approach/ are the messages the same? Why?

E) Recommendation

17.0 What is your personal/ feeling towards practicing CA?

- 18.0 How can CA be approached for you to adopt it?
- 19.0 What is required for farmers to adopt CA in Malawi?

(2) Individual Staff questions on CA

(A) Address for individual Agricultural Extensionist

Name of organization	
0	

Organization Address _____

Name of Officer Interviewed_____

Officer contact Number ____

(A)Background of the Officer

- 1.0 Age Range:
 - (a) 20 30 (b) 31- 40 (c) 41- 50 (d) 51- above

2.0 Gender:

- (a) Male (b) Female
- 3.0 Educational Status:
 - (a) High school Certificate (b) Bachelor's Degree (c) Master's Degree (d) Pro-

fessional certificate

4.0 Occupation:

(a) Civil Servant (b) Extension agent (c) SMS (d) AEDC (e) DADO

f. Other please specify _____

C) Understanding of CA by the Agricultural Extensionist

- 1.0 Why do farmers practice CA?
- 2.0 Why do some farmers never adopted CA?
- 3.0 What challenges do farmers encounter in practicing CA?
- 4.0 How do these challenges/factors encounter or facilitate practicing CA?

D) Production process of CA

- 6.0 Who own and control the land? Why?
- 7.0 How strong is the farmers control over the land? Why?
- 8.0 How secure is the land? Why?
- 9.0 Where do you sell your farm produce? Do you get profits? Why? How do they use the profits?
- 10.0 How do farmers access farm inputs? Why?
- 11.0 How do farmers acquire farm inputs to improve their crop Productivity? Why?
- 12.0 Comment on availability of inputs in the area.

13.0 How do farmers find capital for their farming activities? Why?

- 14.0 By what means do farmers work/cultivate on their farm? Why?
- 15.0 How competent are the extension agents in providing agricultural extension services and technical support to farmers?
- 16.0 How do institutions/private sectors support farmers? Why?
- 17.0 Which organizations provide CA support/ messages? How are their approaches / are the messages the same? Why?

E) Recommendation

18.0 What is your personal/ feeling towards CA adoption by farmers?

19.0 How can CA be approached for farmers to adopt CA?

20.0 What is required for farmers to adopt CA in Malawi?

Focus Group Discussion (FGD) Questions

The Focus Group Discussion (FGD) instrument for data collection for the thesis in partial fulfilment of the requirements for the Masters of Arts Degree in Development Studies at the International Institute of Social Studies of Erasmus University, Rotterdam the Netherlands. The topic of this research is Politics of Conservation Agriculture in Malawi. The study is strictly for academic purpose. Information obtained from the research shall be used for academic purpose.

(3) FGD questions on CA

A) General Address

Name of Club/Village _____

Address _

Number of farmers interviewed _____

Number of Male farmers

Number of Female farmers_____

Contact Number of some farmers

B) Background of the farmer

Age Range:

(a) 20 – 30 (b) 31- 40 (c) 41- 50 (d) 51- above

C) Understanding of CA by farmers

1.0 Have you ever heard of Conservation Agriculture?

2.0 If yes, from where?

3.0 If no, why?

4.0 Why do you practice CA?

5.0 Why have you never adopted CA?

6.0 What challenges do you encounter in practicing CA?

7.0 How do these challenges/factors encounter or facilitate practicing CA?

D) Production process of CA

- 8.0 Who own and control the land? Why?
- 9.0 How strong is your control over the land? Why?
- 10.0 How secure is the land? Why?
- 11.0 How do you access farm inputs? Why?
- 12.0 Where do you sell your farm produce? Do you get profits? Why?
- 12.0 How do you acquire farm inputs to improve your crop productivity? why?
- 13.0 Comment on availability of inputs in your area
- 14.0 How do you find capital for your farming activities? Why?
- 15.0 By what means do you work/cultivate on your farm? Why?
- 16.0 Do you have relatives working somewhere?
- 17.0 Which organizations provide CA support/ messages? How is their approach/ are the messages the same? Why?

E) Recommendation

- 18.0 What is your personal/ feeling towards practicing CA?
- 19.0 How can CA be approached for you to adopt it?
- 20.0 What is required for farmers to adopt CA in Malawi?

Respondent	Gender	Age Range	Marital Status	Education	Village	ТА	EPA
1	Male	31-40	Married	Primary	Chingati	Kaomba	Lisasadzi
2	Female	31-40	Married	Primary	Chingati	Kaomba	Lisasadzi
3	Female	41-50	Married	Primary	Chingati	Kaomba	Lisasadzi
4	Male	51- above	Married	Primary	Chingati	Kaomba	Lisasadzi
5	Female	51- above	Married	Primary	Chingati	Kaomba	Lisasadzi
6	Male	51- above	Single	Primary	Chingati	Kaomba	Lisasadzi
7	Male	41-50	Married	Primary	Chingati	Kaomba	Lisasadzi
8	Female	31-40	Married	Primary	Chingati	Kaomba	Lisasadzi
9	Male	41-50	Married	Primary	Chingati	Kaomba	Lisasadzi
10	Female	41-50	Married	Primary	Chingati	Kaomba	Lisasadzi
11	Female	31-40	Married	Primary	Chingati	Kaomba	Lisasadzi
12	Female	41-50	Married	Primary	Chingati	Kaomba	Lisasadzi
13	Male	31-40	Married	Primary	Chingati	Kaomba	Lisasadzi
14	Female	51- above	Married	Primary	Chingati	Kaomba	Lisasadzi
15	Male	41-50	Married	Primary	Chingati	Kaomba	Lisasadzi
16	Male	20-30	Married	Primary	Chingati	Kaomba	Lisasadzi
17	Male	31-40	Married	Primary	Chilemba	Mnyanja	Kaluluma
18	Male	51-above	Married	Primary	Chilemba	Mnyanja	Kaluluma
19	Male	31-40	Married	Primary	Chilemba	Mnyanja	Kaluluma
20	Male	51- above	Married	Primary	Chilemba	Mnyanja	Kaluluma
21	Male	31-40	Married	Primary	Chilemba	Mnyanja	Kaluluma
22	Male	51-above	Married	Primary	Chilemba	Mnyanja	Kaluluma
23	Male	51-above	Married	Primary	Chilemba	Mnyanja	Kaluluma
24	Male	51-above	Married	Primary	Chilemba	Mnyanja	Kaluluma
25	Male	41-50	Married	Primary	Chilemba	Mnyanja	Kaluluma
26	Male	20-30	Married	Primary	Chilemba	Mnyanja	Kaluluma
27	Female	31-40	Married	Primary	Chilemba	Mnyanja	Kaluluma
28	Female	31-40	Married	Primary	Chilemba	Mnyanja	Kaluluma
29	Female	41-50	Married	Primary	Chilemba	Mnyanja	Kaluluma

Appendix 2: Respondents List-Small Scale Farmers

30	Female	41-50	Married	Primary	Chilemba	Mnyanja	Kaluluma
31	Female	41-50	Married	Primary	Chilemba	Mnyanja	Kaluluma

Appendix 3: Agricultural Extension Workers Interviewed

Respondent	Gender	Age Range	Marital Status	Educational Level	Organization	Extension Planning Ar- ea
1	Female	20-30	Single	Diploma in Agric.	Agriculture	Lisasadzi
2	Male	31-40	Married	Diploma in Agric.	Agriculture	Lisasadzi
3	Female	20-30	Married	Diploma in Agric.	Agriculture	Lisasadzi
4	Female	20-30	Married	Diploma in Agric.	Agriculture	Lisasadzi
5	Female	31-40	Married	BSc. Degree in Agric.	Agriculture	Lisasadzi
6	Male	41-50	Married	BSc. Degree in Agric.	Agriculture	Kasungu ADD
7	Female	20-30	Single	BSc. Degree in Agric.	Agriculture	Kasungu District
8	Male	31-40	Married	Diploma in Agric.	Agriculture	Lisasadzi
9	Female	31-40	Married	Diploma in Agric.	Agriculture	Lisasadzi
10	Male	31-40	Married	Diploma in Agric.	Agriculture	Lisasadzi
11	Female	20-30	Married	Diploma in Agric.	Agriculture	Lisasadzi
12	Female	31-40	Married	Diploma in Agric.	Agriculture	Lisasadzi
13	Male	51 above	Married	Agric. Certificate.	Agriculture	Lisasadzi

Appendix 4: Focus Group Discussion Participants at Chingati Phiri Village

Name	Position in commu- nity	Village	ТА	EPA
Chingati Phiri	Village headman	Chingati	Kaomba	Lisasadzi
Madalitso Hara	Lead Farmer	Chingati	Kaomba	Lisasadzi
Easter Jere	Lead Farmer	Chingati	Kaomba	Lisasadzi
Dias Mwale	Lead Farmer	Chingati	Kaomba	Lisasadzi
Agnes Black	Lead Farmer	Chingati	Kaomba	Lisasadzi
Anastanzia Nzonzi	Lead Farmer	Chingati	Kaomba	Lisasadzi
Rabson Katsilizika	Area Stakeholder Panel Chairman	Chingati	Kaomba	Lisasadzi

Jeladi Mthunzi	Lead Farmer	Chingati	Kaomba	Lisasadzi
Alick Kachili	Chika farmers club chairman	Chingati	Kaomba	Lisasadzi
Jackson waka	Lead Farmer	Chingati	Kaomba	Lisasadzi
Francis Daka	Chika farmers club sec- retary	Chingati	Kaomba	Lisasadzi

Appendix 5: Focus Group Discussion Participants in Chilemba Village

Name	Position in community	Village	TA	EPA
Chilemba Mbale	Lead Farmer	Chilemba	Mnyanja	Kaluluma
Agnes Ngulube	Lead Farmer	Chilemba	Mnyanja	Kaluluma
Apronia Banda	Lead Farmer	Chilemba	Mnyanja	Kaluluma
Christina Nyirenda	Lead Farmer	Chilemba	Mnyanja	Kaluluma
Samson Nyirenda	Lead Farmer	Chilemba	Mnyanja	Kaluluma
Ackson Phiri	Lead Farmer	Chilemba	Mnyanja	Kaluluma
Gabriel Banda	Area Stakeholder Panel Chairman	Chilemba	Mnyanja	Kaluluma
Blayson Chisi	Lead Farmer	Chilemba	Mnyanja	Kaluluma
Tobias Mgemezulu	Cooperative chairman	Chilemba	Mnyanja	Kaluluma
Benson Chirwa	Lead Farmer	Chilemba	Mnyanja	Kaluluma
Stanley Mwale	Lead Farmer	Chilemba	Mnyanja	Kaluluma