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Generational dynamics of agricultural intensification in Malawi: challenges for the youth and elderly smallholder farmers

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ABSTRACT

In the next 24 years, the Malawian population is expected to double, a development that will inevitably affect access to land and land holding sizes. As access to land is already limited, securing food for the growing population will require policy shifts including the promotion of agricultural intensification. Malawi's economy depends on the agricultural sector, and this paper addresses the generational perspective of agricultural intensification, with specific focus on youth and elderly in smallholder production systems. Despite wide recognition that an overwhelmingly large share of the Malawian population is young, our research finds that the younger generation have less access to land than the older generations. The elderly are limited in farming due to the physical labour required for agriculture, yet they withhold their pieces of land. Our research shows that maize yields have remained low between 2008 and 2017, and that the elderly have had the lowest yields. The potential for sustainable agricultural intensification therefore remains low until access to land and financial support for the youth receive special attention in all relevant circles including policy discourses. The paper situates the findings from this study within the broader scholarship on generational changes and perceptions in relation to access to resources for production.

KEYWORDS

Agricultural intensification; smallholder farmers; opportunity space; access to land; youth; elderly; Malawi

Introduction

Sub-Saharan Africa has a relatively young population which is projected to increase by 95 million between 2015 and 2030, and the youth (aged 15–24) is expected to have doubled between 2015 and 2055 (United Nations [UN], 2015). Challenges of absorbing the youth into satisfactory and sustainable employment are increasingly debated on the global agenda (Sumberg & Okali, 2013; World Bank and IFAD, 2017) and agriculture is perceived to play a key role in that respect. To meet the demand of a growing population, employment opportunities within the agricultural sector need to increase (Ripoll et al., 2017; White, 2012; World Bank and IFAD, 2017).

While there is a growing body of literature addressing youth in SSA, research on the links

between generations is still scanty, as is rural livelihood research on elderly in SSA. In this paper we explore agricultural intensification (the increase of agricultural productivity) in Malawi from a generational perspective to understand the challenges for both the youth and elderly smallholder farmers. The two guiding research questions are: To what extent are youth and elderly farmers participating in agricultural intensification; and what challenges do youth and the elderly experience in relation to agricultural intensification? By answering these two questions, the paper aims to contribute to the understanding of generation-specific challenges of agricultural intensification which could have an impact on future policy work related to agricultural intensification. This paper focuses on maize production

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systems as maize is the largest staple crop in Sub-Saharan Africa and in Malawi (Andersson, 2011; Chinsinga & Chasukwa, 2012).

The study focuses on Malawi because this is a country that is exemplary of the population dynamics (including the youth) and livelihoods situation in SSA. Malawi faces several challenges. An overwhelming share of the population (nearly 85%) lives in rural areas (Government of Malawi [GOM], 2018) and agriculture is recognized to be the backbone of country's economy. The agricultural sector engages four fifths of the workforce and is dominated by smallholder farmers who primarily produce maize as the main staple crop (Chinsinga & Chasukwa, 2012; Chinsinga & Chasukwa, 2018; Government of Malawi [GOM], 2010, 2017a). Over 90% of all maize produced in Malawi comes from smallholder farmers. Most smallholder farmers are, however, constrained by limited land and assets to produce maize surplus for sale (Jayne, Sitko, Ricker-Gilbert, & Mangisoni, 2010). In Malawi, the agri-food sector ought to be prioritized to create job opportunities for the youth (Chinsinga & Chasukwa, 2012). Youth constitute a large proportion of the Malawian population (GOM, 2018) and unemployment rates for the youth are higher than those for the population as a whole (Government of Malawi [GOM], 2012, 2013).

The Malawian demographic challenges

There is no universally accepted definition of the term 'youth', however the term usually refers to individuals within a certain age span. The UN uses the ages from 15 to 24, while the African Union Commission uses the ages of 15–35. In the Malawian context 'youth' is defined as individuals between 10 and 35 (Government of Malawi, 2013, p. 2). Within our study, individuals aged between and including 18–35 years are included when identifying youth headed households. The definition of 'elderly' faces similar challenges. In Malawi older persons are defined as 65 years or over (GOM, 2017a) and our study adopts the same classification of age groups. This is consistent with Malawi's National Statistical Office (NSO) classification of age groups and therefore enabled us to compare data across the country.

Currently the youth (aged 10–35) constitutes about 48.7% of the total population and, as the annual population growth remains high at 2.9% (GOM, 2018), the Malawian population is projected to double in 24 years. To meet an increasing

demand, the agricultural sector is highlighted for its potential to absorb youth into employment. The youth could potentially modernize the sector, increase productivity, develop agri-food systems and bolster rural transformation, while at the same time addressing unemployment among the youth (Kafle, Paliwal, & Benfica, 2019).

While population growth remains high, life expectancy has increased sharply during the last two decades. In 1980, life expectancy at birth was 44.8 years and in 2000 it had increased somewhat to 46.5 years. During the same timeframe, the HIV/AIDS epidemic slowed down the increase in life expectancy at the end of last century. However, since 2000 the country has managed to turn around the HIV prevalence, and the life expectancy rate had in 2016 jumped to 63.2 years (World Bank, 2018). While this is a remarkable increase it must be stressed that life expectancy by global standards is still low in the country. In the recent Malawi Population and Housing Census of 2018, older persons constituted 3.7% of the total population. While older persons' share of the total population remains low the increase in absolute numbers is significant. Between 1987 and 2008, the number of persons aged 65 years and above increased by 44.6% (Government of Malawi [GOM], 2016), and between 1987 and 2018¹ the number of older persons increased by 88.1% (GOM, 2018). The increase in life expectancy rate reflects improvements in the quality and access to health care, nutritional intake and living standards. The substantial increase in life expectancy rate, however, also suggests that land transfer is postponed and that the younger generation needs to wait longer to own their own land unless they have the possibility to purchase land rather than inherit it. Hence, there is a strong interdependence between the generations, and what happens at the top of the demography pyramid affects the livelihood perspectives of the bottom.

Conceptual framework

This paper builds on the concept of 'opportunity space'. Sumberg, Anyidoho, Leavy, teLintelo, and Wellard (2012) define opportunity space as the set of available options within a given context for each individual to establish an independent life. The individual opportunity space is a function of both surrounding structural factors as well as the individual's ability to engage in a possible opportunity space. Through this concept an individual's engagement or

disengagement and advantages and disadvantages, in relation to livelihood opportunities in a specific context may be analysed and understood. While Sumberg et al. (2012) and Sumberg and Okali (2013) use the concept in relation to youth only, we see the possibility for an extended use which includes individuals from all age groups. By doing so we see the need of extending the concept from *establish an independent life* to also include *maintaining an independent life*.

Within the concept, two types of opportunity spaces are identified: the near and distant opportunity spaces. Within the near opportunity space, the specific context of where the individual is settled is considered. The space is influenced by both geographical factors such as natural resources and access to markets, and social factors such as gender, class, level of education, norms and social networks. The distant opportunity space, on the other hand, is the specific context of opportunities that can be reached through short- or long-term migration. The process of establishing a livelihood and an independent life is furthermore influenced by interests, attitudes and chances.

A recurrent concern addressed by Sumberg et al. (2012) and Sumberg and Okali (2013) is the ignorance of heterogeneity among youth in previous research, including individual interests and aspirations as well as differential access to resources and networks. Therefore, contextual and social differences need to be emphasized to understand the different opportunities available to individuals' (Sumberg et al., 2012; Sumberg & Okali, 2013). A recent review on youth engagement in agribusiness in Sub-Saharan Africa confirms that the diversity of youth's aspirations and capabilities need to be acknowledged for interventions on youth in agriculture to be successful (Yami et al., 2019).

While the concept specifically addresses the challenges for rural African youth to become financially independent, applying the concept to other demographic groups is beneficial. The concept is inclusive enough in addressing both geographical and socially influencing factors that may increase or limit an individual's opportunities, highlighting the differences experienced by each individual in a given context and time. Yet, currently the specific focus is on younger individuals' transition from dependants to young independent adults. In older age cohorts, for which we can assume that this transition has already taken place, the framework can instead be used to provide a deeper understanding of different individual

pathways, generational diversity of opportunities and limitations, as well as diversity within and between communities.

To compensate for insufficient social welfare in many African contexts, the extended family serves as a social and economic safety net for the elderly, unemployed as well as other less fortunate individuals (Andersson, 2011; Schatz & Seeley, 2015). In SSA the various household compositions may be complex and could include three generations and more than one family (Zimmer & Das, 2014). Traditionally, the elderly are cared for by their children as most African societies lack a formal inclusive social security system (Miller, Tsoka, Reichert, & Hussaini, 2010; Schatz & Seeley, 2015; Zimmer & Das, 2014). In cases where an elderly person does not have children, other members of the extended family network provide support. An individual who has not had formal employment is not entitled to retirement benefits and an increase of elderly and unemployed youth (in both absolute and relative terms) might lead to care burdens that could exhaust the extended family relations. In African societies there is a strong interdependence between generations (Schatz & Seeley, 2015), thus social background and networks are important to consider when addressing the individual's opportunity space.

To produce more favourable development outcomes, programmes and policies targeted toward certain groups of people need to be better grounded and more nuanced in terms of context-specific variation as well as socially differentiating factors that influence individuals' opportunities (Sumberg et al., 2012; Sumberg & Okali, 2013). In the Malawian context, we see the concept of opportunity space being applicable to generational issues in relation to intensification determining factors such as access to land, labour, extension services and other development initiatives.

The Malawi policy framework

This section highlights key policy issues related to agricultural intensification and generational concerns to contextualize youth and elderly in general and the research participants in particular. The four most relevant national policies related to agricultural intensification and generation are (I) the Vision 2020, (II) the National Agricultural Policy, (III) the National Youth Policy, and (IV) the National Policy for Older Persons. A policy framework which addresses the generational

perspective in relation to the agricultural sector specifically is new in Malawi and only started with the National Youth Policy in 2013. Shortly thereafter, in 2016, the National Policy for Older Persons was promulgated. For purposes of planning and implementation, the various sectoral policies are synthesized and prioritized into a broad national strategy, the Malawi Growth and Development Strategy III (Government of Malawi [GOM], 2017b).

First, the national development goals for 2020 that were outlined just before the Millennium had a clear aspiration: to become a middle-income country by 2020; and the agricultural sector is emphasized in the document (Government of Malawi [GOM], 1998). One of the development goals outlined is to achieve sustainable economic growth and development. Despite its broad approach to development, generational concerns are limited throughout the Vision 2020. The only area where partial reference is made to generational issues is education within the context of school-going youth.

Second, the National Agricultural Policy (GOM, 2010) aims at contributing to food security, poverty reduction and economic development of the country. The policy emphasizes that agriculture is the backbone of Malawi's economy and seeks to improve agricultural productivity through promotion of credit facilities for farmers, improving capacity building, promoting farm mechanization, improving technologies for storage preservation, promoting livelihood diversification and strengthening farmers' organizations.

Third, in 2013, the Malawi government launched the National Youth Policy (GOM, 2013) which was aimed at addressing challenges related to the large youth cohort. The challenges of absorbing youth into sustainable employment are highlighted, and underemployment is considered to be one of its major obstacles. The potential human resources in youth and their possibilities to contribute to national development are emphasized in the youth policy. The policy also acknowledges, however, that such possibilities depend on the well-being of youth and overcoming obstacles that hinder their opportunities, for example poverty, underemployment and health related concerns.

Fourth, the National Policy for Older Persons (2016) aims at protecting the rights of older persons and improving the quality of life for the elderly by 2020. It highlights that an increase in the country's older population will have economic, social, political and

cultural effects on society with implications for the labour market, investments, savings, living arrangements and changing values and attitudes. Apart from being vulnerable in Malawian society, older persons are among the poorest of the poor, have poor housing conditions and are at high risk of malnutrition. Anchored within the customary land ownership regime where most smallholder farmers operate, the policies related to agricultural intensification and generation are expected to be implemented in a highly contested land reform context. Since 1996 when government appointed a Land Reform Commission several efforts have been made towards transforming the landscape that would eventually result in not only developing the new land policies and laws but also changing the land management systems. Although the policy was passed in 2002, enactment of land laws did not take place until 2016. However, the entire reform process has been characterized by intense debates over many issues including security of land entitlements, equitable access and ownership of land by women and other vulnerable groups, role of traditional rulers, and foreign ownership. Advocates for the rights of the poor argue that the current land reform would encourage the capturing of land from the poor smallholder farmers and hence exacerbate rural impoverishment.

All these policies represent efforts by the state to understand the role and functions of both the youth and elderly in national development and the challenges they experience. However, beyond these policies few programmes and interventions exist for promoting their interests. This situation is not very different from what obtains in other parts of Africa in the sense that generational issues tend not to be fully integrated into developmental programmes (Yami et al., 2019).

Methodology

In this paper we explore agricultural intensification in Malawi from a generational perspective, and we aim to analyse long-term trends in yields and agricultural inputs together with qualitative explanations for these trends and the current situation. This paper therefore draws on a mixed method approach based on quantitative data from the Afrint database which includes longitudinal data on smallholder farmer intensification from eight villages. The quantitative data is complemented with interviews and focus group discussions with smallholder farmers from three of these villages.

The study sites (villages) represent three categories of smallholder farming communities in Malawi: those above average, intermediate and below average rural income. Intra-household qualitative data collection on gender and pro-poor agricultural growth had been carried out in the villages in late 2012 and these villages are revisited to provide a longitudinal perspective of the broader changes in the communities (see Anderson Djurfeldt, Hillbom, Mulwafu, Mvula, & Djurfeldt, 2018). Moreover, qualitative village level data was collected in August of 2017, mainly through focus group discussions and key informant interviews. All the villages are located away from the tarmac roads. The distance to the centre of each of the villages varies, with Nkhwangwa and Chikwanje being fairly short (0.25 km) and Khasu being farther (3 km). There is no specific data on the population of the villages but the average number of households is around 500 per village. In almost all villages, agro-ecological and environmental problems were evident. The commonest problems concern unreliable rainfall, deforestation due to charcoal burning and soil erosion. Nutrient depletion partly related to soil mining was mentioned to be a problem in two of the villages (Khasu and Chikwanje). The same villages also practice some forms of irrigated agriculture as a way of increasing food security. This involves the use of residual moisture in dambos, drip irrigation, channels, buckets and treadle pumps. Flood irrigation for rice cultivation was also observed. Cattle are kept in all the three villages and these tend to graze mostly in the *dambos*² but also in fields of individuals after harvest.

Afrint database

Quantitative data has been collected in four rounds in 2000–2002, 2006–2008, 2011–2013 and 2015–2017 respectively. Originally data was collected in six African countries: Ghana, Kenya, Malawi, Mozambique, Tanzania and Zambia with the aim of analysing prospects for a potential African Green Revolution in the African context. A multiple stage, purposive sampling

strategy has been used and the countries included are all within the maize and cassava belt. Within each country, regions and villages were selected based on their potential for agricultural intensification (yet excluding the most well-known examples of agricultural intensification).

A balanced panel design has been used, meaning that households that were sampled in 2002 have been re-surveyed throughout the subsequent phases and population changes within villages have been taken into consideration, for example, by replacing out-migrated households and sampling one descendent of the initially sampled respondents. The quantitative data covers areas of demography, crops, productivity (yields), access to livestock, access to labour, access to resources (cultivated area) and inputs such as fertilizer, improved seeds and extension service. It is the self-identified farm manager who has been interviewed in the survey.

In this study, we use the rounds of 2006–2008 to 2015–2017 from Malawi.³ Within villages, households were randomly sampled thus being representative at the village level and the dataset includes 406 households in eight villages. Table 1 presents an overview of the generational belonging of the households included.

As can be seen from Table 1, the share of youth headed households has fallen since 2008, while the share of older generation households has nearly doubled. This may, however, be an effect of panel aging, rather than a true reflection of changes in village demographics. Those farm managers who were sampled in 2008 have aged nearly ten years since that round of data collection.

Interviews and focus group discussions

Qualitative data collection was carried out in August – September 2018 by a team of senior researchers and research assistants who had been trained in a workshop before data collection. Out of the eight villages included in the quantitative data collection, three

Table 1. Generational belonging as share of total sampled households.

Generational belonging	2008	2008	2013	2013	2017	2017
	N	%	N	%	N	%
Youth headed households (up to 35)	151	37.9%	87	22.5%	70	17.2%
Intermediate generation (36–64)	199	50.0%	235	60.7%	247	60.8%
Older generation (65 and above)	48	12.1%	65	16.8%	89	21.9%
Total	398		387		406	

villages were selected for qualitative data based on the same criteria of farming communities above average, intermediate and below average rural income. The interviews included background questions on land, crops, farming techniques, inputs and demography to understand each household's current situation. The interviews further included questions based on generational belonging and aimed to explore generational specific challenges, aspirations and possibilities to engage in agricultural intensification. In total 59 interviews were held with individual respondents: 19 in Nkhwangwa, 22 in Chikwanje and 18 in Khasu.⁴ Interview respondents were sampled from the quantitative data and these were grouped into three categories: (1) youth headed households (aged 18–35); (2) youth who live within households headed by others stratified by gender; and (3) elderly headed households aged (65 and above).

Three focus group discussions (FGD) were carried out with the youth in each village. One group consisted of respondents from youth organizations and the remaining two were divided by gender. The focus group respondents did not participate in the individual interviews. Central themes for the FGDs were youths' access to land and challenges in relation to owning land, possibilities for intensifying farming, and main concerns among the younger generation as well as future aspirations.

The interviews and FGDs were all recorded and transcribed verbatim. Prior to the interviews, the respondents were informed about the study and also asked whether they agreed to record the interview. They all gave their consent to participate in the study and to record the interview.

In our analysis we compare trends in the quantitative data using t-tests to establish statistical significance over time and analysis of variance of means between the three age cohorts: youth, intermediate generation and elderly. Data generally has been analysed through the Statistics for Social Sciences Package (SPSS), with the exception of t-tests which have been calculated using Excel. In the quantitative data we focus on maize yields, cultivated land, farming inputs and extension services to identify trends over time as well as between generations. Based on geographical context and generational belonging we structured the qualitative data, and thereafter it was analysed thematically to explain the quantitative trends and provide a deeper

understanding of how generational belonging influences agricultural intensification.

Results and discussion

In this section we return to our two research questions: (I) To what extent are youth and elderly farmers participating in agricultural intensification and (II) what challenges do youth and the elderly experience in relation to agricultural intensification? We aim to discuss and answer these by addressing various important components for the agricultural intensification process such as access to land, trends in maize yields, use of chemical and improved seeds and access to extension services, and by looking closer at the challenges of agricultural intensification from a generational perspective.

Access to land

Agriculture is the dominant source of livelihood for the majority of the Malawian population and access to land is described by Chinsinga and Chasukwa (2012) as the main determinant of household food security, resilience and welfare. However, the issue of access to land is being challenged by the rapid population growth in Malawi. The last two censuses, 2008 and 2018, indicate a growth from 13,029,498 to 17,563,749 individuals in 2018. This represents an increase of 35%. Consequently, the population density has simultaneously increased (GOM, 2018) and there is a persistent growing demand for land. Jayne, Chamberlin, and Headey (2014) argue that rising rural population density in SSA will lead to shrinking farm sizes for most smallholder farmers, fields will be cultivated continuously and thereby causing land degradation, and land rentals and marketing of land will increase as competition for fertile land will intensify. A substantial increase of land prices over the next decades in SSA is to be expected. According to Jayne et al. (2014, p. 2), there are four main groups competing for land: (i) rural communities (including smallholder farmers), (ii) urban residents investing in land, (iii) foreign companies for which agricultural land in Africa still is relatively cheap, and (iv) national governments. Peters (2002) argues that due to the fundamental role of land in agrarian Malawi and the national land scarcity, most conflicts and disputes between and within families are land related.

There is a high awareness of the consequences of rapid population growth in the study sites. Despite not asking directly about the population growth, many respondents raised the issue and considered it as problematic as it will result in even less land available for future generations. Yet, land is already scarce. According to Asfaw and Maggio (2018) over 70% of the smallholder farmers have less than one ha to farm. Our quantitative data shows that households on average cultivated 0.77 ha in 2017, although there is a wide range between the villages, from 0.36 to 1.04 ha. Table 2 provides an overview of mean cultivated area per age group and over time. The data suggests that between 2008 and 2017, mean average cultivated area has decreased for all age groups. Between 2013 and 2017, a large decrease of mean cultivated land is noted. In contrast to Yami et al. (2019) who argue that youth in Malawi have gained access to land through land reforms, our data suggests that youth throughout the study have had the smallest cultivated area on average.

Our qualitative data confirms the difficult situation regarding youth access to land. The following quote is from the youth club in Khasu:

Most youth in the village have no land of their own. It's only 25 percent of the youth that have personal land, others work in their parents' field. Lack of land among the youth is due to a number of factors such as land pressure created by rapid population growth and that youth have no money to rent land ... It is only very few youth who are able to buy land as they don't have means of earning money ... There is a problem of shortage of land in the community. This makes the youth become very unproductive and dependent on their parents (September 6, 2018)

In the focus group discussion with the youth club in Nkhwangwa (30 August 2018), the youth narrated that rather than transfer land to their grown-up

Table 2. Mean total cultivated area (ha) per individual in three age groups in 2008, 2013 and 2017.

Age group	2008	2013	2017**
Youth	1.09	1.09	0.60
Intermediate generation	1.23	1.17	0.79
Elderly	1.14	1.25	0.83

Notes: Extreme cases removed. Extreme cases have been removed at the village level, since this is a highly skewed variable and one or two extreme cases at the upper end will give a mean that distorts the analysis. Removing extreme cases is standard practice in the social sciences for skewed variables such as land distribution and income.

**Differences between the age groups were significant at the 5% level for the 2017 survey.

children, parents prefer to rent out land as this brings in extra income to the household. All the youth focus group discussions reveal that very few of them have access to land. Many young people farm together with their parents and one reason for this is that they are still attending school and are dependent on their parents or guardians. However, there are other older youth who dropped out of school and have limited access to land. According to tradition, access to land is acquired only when one marries or through inheritance when parents pass away. In Chikwanje and Nkhwangwa it was also emphasized that female youth in many cases are the ones who are marginalized in land allocation relative to male youth. Mostly girls get land through marriage and lose it upon divorce or death of the husband. Although this is largely a matrilineal area, most women end up settling at their husbands' homes, under a system known as *chitengwa*. When a woman marries and leaves her parents' home, she may lose access to land as she is expected to use the land at her husband's home. For more details on inheritance traditions in matrilineal or patrilineal societies in Malawi, see Asfaw and Maggio (2018) and Takane (2008). The quantitative and qualitative data on youth and access to land are coherent: youth face challenges in accessing land for cultivation and consequently, their opportunity space in terms of land is severely limited. This phenomenon has been noted earlier in the literature (Jayne et al., 2014; White, 2012). Jayne et al. (2014) point to the risk of future generational (and inter-sibling) conflicts over land, as a consequence of population growth and increased rural population density. Rural parents withhold land longer or find it more profitable to rent or sell the land. When inheritance does occur the younger generation inherits less. As access to land becomes more and more difficult, rural youth are left with the option of farming on family land, renting or buying land, becoming contract farmers or searching for other livelihood opportunities. Similar concerns have been raised by Peters (2002) for Malawi more generally. She has argued that land scarcity has caused increased tension between (and within) families, and disputes over land have increased. In a long-term perspective, these conflicts and their outcomes will consequently have impact on the social stratification and class formation (Peters, 2002). From the elderly's perspective this phenomenon is a consequence of an insufficient social welfare system. Rural elderly without pensions remain dependent on farming (or

the possibility to rent out their land) to secure their basic needs. While some respondents indicated that they had not lost any part of their land, others indicated some loss due to environmental degradation, i.e. gully formation, loss of fertility partly resulting from soil erosion by runoff (common in villages cultivating in marginal and hilly areas) and land grabbing.

At a first glance the explanations given by respondents interviewed for the qualitative field work is rather surprising as 25 out of 59 farmers answered that they do have enough land despite the very limited mean size of land for smallholder farmers throughout Malawi. However, a closer look at the answers reveals a somewhat more nuanced picture of the situation. One respondent said land is enough as he does not farm any longer; seven respondents explained that land is enough simply because the household is small (occupied by a single, couple or three individuals). Five respondents argued that land itself is enough, however, production is not enough, and finally, two farmers said that considering the increasing population and shortage of land in Malawi, they perceive land is enough.

Agricultural intensification

In total, 406 households were surveyed in eight villages for the quantitative part of the study, out of which 403 households grew maize.

Maize production per household is relatively stable across years among all three age cohorts (Table 3). The differences between the groups are minor: among youth headed households the average maize yields for 2015–2017 was 1186 kg/ha, for elderly the average maize yield was 1021 kg/ha for the same period and, for the middle generation the average was 1317 kg/ha for the 2015–2017 seasons. With regard to maize yields no intensification process can be identified. The highest yield attained among the surveyed farmers was nearly 4500 kg/ha, though, and this substantial gap suggests possibilities for

Table 3. Mean maize yields, in kg/ha per age group in 2008, 2013 and 2017.

Age group	2008	2013*	2017*
Youth	1190	1054	1186
Intermediate generation	1152	1233	1317
Elderly	1031	1012	1021

Note: Extreme cases removed.

*Differences between the age groups were significant at the 10% level for the 2013 and 2017 survey rounds.

improvements following intensification. High population pressure, falling soil productivity, unstable maize prices which lead to disinvestment in maize production, pests (including weeds), poverty and high incidence of diseases which lower labour productivity may explain low maize yields during this period (Andersson, 2011; Andersson Djurfeldt et al., 2018). From the quantitative data it is notable, however, that throughout the rounds of data collection, the elderly had the lowest average maize yields. The qualitative data suggest low yields are due to age and lack of energy to engage in farming to the same extent as earlier in life.

The use of chemical fertilizer and improved varieties of maize among youth and elderly has remained low throughout the data collection. In the 2017 crop season, the share of youth headed households who used chemical fertilizer was 52%, identical to the share of elderly headed households. The share of youth headed households who grew improved varieties of maize was 59% in 2017, compared with 42% among households headed by respondents aged 65 years or above. These figures suggest great potential for improvement; however, from qualitative data we are informed that agricultural inputs are too expensive, and the low use may therefore be caused by limited financial resources.

To intensify farming, respondents from all the three villages highlighted several insufficient components within the nearby opportunity space. First, the need for farm inputs like fertilizers and hybrid seeds to increase yields is great. Furthermore, increased use of farm tools and techniques, especially irrigation which would enable farmers to harvest twice or three times per year is emphasized. Another component mentioned for intensifying farming is the lack of good and accessible markets with stable and high crop prices. Other respondents mentioned extensification: 38 respondents said more land is needed, or rather enough land or enough land for crop diversification.

The four main obstacles to agricultural intensification are, according to the qualitative data, (I) lack of farming inputs such as fertilizer and improved varieties of seeds, (II) lack of land, (III) no access to credit to invest in farming and (IV) limited extension services.

Extension services

The quantitative data from 2017 illustrates smallholder farmers' limited access to governmental

extension services. The government currently pursues a demand driven approach whereby farmers seek extension services as and when required. A limited number of extension staff have been stationed at Extension Planning Areas to provide technical advice to farmers. At the same time, lead farmers have been identified and trained in the villages to address basic issues at the local level. For complicated issues requiring technical advice, the lead farmers report to extension staff. As government personnel are few and far apart, several nongovernmental organizations provide extension staff for specific projects in the villages they work. Only 11% of the farmers in the survey confirmed that they *regularly* had received advice from governmental extension staff during the previous year. A much higher number, 48%, answered that they *rarely* had received advice from governmental extension service, while 41% answered that they *never* had received advice during the previous year. Not much difference is seen between the age groups. If a larger share of smallholder farmers regularly received advice from extension service, their opportunity space for agricultural intensification would increase.

Similar to the quantitative data, in the qualitative data less than half of the respondents (22 out of 59) stated that they personally have access to agricultural extension services nowadays. However, in the qualitative data access to agricultural services appears unevenly distributed among the three villages. In Nkhwangwa and Khasu, a smaller share has access (six out of 19 respondents and four out of 18 respondents respectively) while in Chikwanje more than half, 12 out of 22, of the respondents have access to agricultural extension services. Instead of personally meeting the agricultural extension officer, smallholder farmers explained that they receive advice and learn from other villagers through various meetings within the community, or by listening to radio. However, a respondent from Nkhwangwa argues that the extension services offered through radio is too theoretical. Another negative aspect is the inability to ask for clarification which is possible when an extension officer is present. Furthermore, it is easy to miss the programme if you are away from home or you are out of batteries. Two respondents informed us that they learned about agriculture and agricultural techniques in school. In Chikwanje and Nkhwangwa, the youth reported that when extension personnel come to the village, the youth are side-lined as illustrated by the following quotes:

Agricultural services are offered to clubs and these clubs are for the adults only. The youth have difficulties to join the clubs unless they are staying on their own. (Focus group discussion with male youth in Chikwanje, September 3, 2018)

Most youth in the village do not have access to agricultural extension services. A very few youth acquire such services through their parents when they are assisting in the field (Focus group discussion with male youth in Nkhwangwa (August 28, 2018)

Marketing and access to credit

Consistent with previous research (see e.g. Andersson, 2011; Chinsinga & Chasukwa, 2012), smallholder farmers in all three villages complain about the lack of well-functioning markets and unstable maize prices and how they are left with no option but to sell potential surplus to vendors.

The qualitative data from Malawi identifies several challenges related to marketing of farm produce. First of all, access to markets is difficult due to poor roads, limited opportunities to travel as well as limited means of transporting products. Therefore, most farmers sell their produce to vendors who, offer low prices and use unreliable measurements when produce is weighed. Another identified challenge is the unpredictability of prices of crops. These factors clearly limit the villagers' opportunity space as they are being poorly paid and unwilling to invest more in crops due to unstable prices.

Out of 59 interviews only 14 households have received credit or borrowed money to use for agriculture in the past five years. Of the 14 who had received credit or loans, six respondents have borrowed money from friends or relatives, three respondents explained how they used to be members of an agricultural club through which they received fertilizer as a loan, three respondents have got a financial loan for agriculture and, finally, two respondents have received agricultural credit through seeds from an NGO. In their recent research Chinsinga and Chasukwa (2018) also found that youth in Malawi faced difficulties in accessing financial capital. Limited access to credit among smallholder farmers is not limited to Malawi. Lack of guarantee options make smallholder farmers unqualified as customers among the majority of the microfinance institutions, and previous research suggests that this constraint is found throughout the African continent (IFC, 2013; Suleiman, 2018; Valle, 2012).

Youth

Previous qualitative research on youth and agriculture in Malawi describes how young people express a sense of powerlessness and hopelessness regarding ongoing land transactions from smallholder farmers to large-scale local and foreign investors. According to Chinsinga and Chasukwa (2012) young people are marginalized from agriculture and agri-food business in Malawi due to stalled land reforms and lack of supportive policy. The aging farming population will eventually have to be replaced by younger generations and the current inability to involve youth in the agricultural sector is perceived by both officials and youth themselves as a missed opportunity (Chinsinga & Chasukwa, 2012). The education policy requires all children to be attending school. Free primary education and other support services like food are provided to encourage children to stay in schools. But the youth policy expects the youth to take an active part in all decisions affecting their lives such as in the areas of agriculture and health (GOM, 2013). For a variety of reasons including lack of tuition fees and limited admission space, a large share of the youth do not go beyond secondary school education in Malawi. For the bulk of rural youth that do not proceed with education, agriculture is the main alternative. However, as argued by Chinsinga and Chasukwa (2018) it is rather by forced circumstances than by choice.

The qualitative data on how youth are perceived in any of the three villages is ambiguous. On the one hand, youth are viewed by the villagers and themselves as full of energy and hardworking, yet the youth themselves emphasize how difficult it is not to own land on their own and how parents prefer to rent out land rather than providing them with land to farm. However, a contrasting perspective of youth also exists among the villagers. This perspective highlights instead how the youth are perceived to be lazy and untrustworthy, and that they are regarded as unproductive and consume too much alcohol. The two folded views are captured in the following quotes:

Youth in the community are viewed as untrustworthy because the way the youth themselves behave leaves a lot to be desired. Most youth are fond on beer drinking. (Interview with a young farmer in Nkhwangwa, August 28, 2018)

Youth are normally regarded as crooks, thieves, those who cannot be trusted and on the positive side, we are

considered energetic. (Interview with a young farmer in Nkhwangwa, August 30, 2018)

Youth themselves explain that the main limitation to establishing a livelihood of their own is lack of land. We were informed during interviews and group discussions that most of the youth in the villages still stay with their parents and do not own their own land. A recent study on rural youth in Malawi found that considering the current land pressure, youth had difficulties to convince their families to be allocated a piece of land on their own (Chinsinga & Chasukwa, 2018). Limited access to land inhibits the youth to be productive and affects their livelihood, and it hinders them to become independent young adults. The study reveals that very few youth have access to land and therefore many farm together with their parents or guardians. In Chikwanje and Nkhwangwa, male youth are favoured in land allocation. It was emphasized that female youth in many cases are the ones who are marginalized in land allocation relative to male youth. The female focus group in Nkhwangwa explains:

Some parents do not have enough land for the whole family hence not possible to give the girls land for farming. Other parents say because they are young, it will be a waste of resources to give them land. (August 28, 2018).

Limited land for farming is highlighted as one of the main concerns of youth in all three villages. Other major concerns raised by the younger generation include school dropout due to poverty, alcohol and drug consumption among youth, access to farm inputs and access to credit to start small scale businesses.

In line with Chinsinga and Chasukwa (2012), youth interviewed in this study also express a sense of hopelessness and exclusion within the villages as they lack their own land, are excluded from development projects and village development committees, and are sometimes looked down upon.

The youth want to be recognized in land allocation because not many proceed with school to high levels. For instance, when they drop out of school or leave at Form 4, they desire to be included in extension service provision, entrepreneurship skills to have productive and profitable farming. In one village where groundnuts is a useful crop for sale, and in another village where tobacco production is intensified, the youth want to be involved in agriculture and commercialization.

Elderly

Malawi, and SSA, has a young population and the challenges of meeting the needs of youth have gained increasing attention by the African governments (Apt, 2012; Sumberg & Okali, 2013) and international actors (World Bank and IFAD, 2017), while much less attention has been paid to the aging population (Schatz & Seeley, 2015; Zimmer & Das, 2014). The elderly in Malawi only constitute 3.7% of the population, however the increase in absolute numbers of this demographic group during the past few decades is substantial (Government of Malawi, 2018). In SSA in general, the age group of 60 years and above increases by 3.2% annually (Apt, 2012). Thus, this age group will double in 22 years.

A study investigating associations between household compositions and wealth in 23 SSA countries suggests that elderly are among the poorest segments of society. The three poorest household compositions were (i) older persons living alone, (ii) a household of elderly or (iii) a household of elderly and youth, a so called skipped-generation household in which the middle generation is missing. Furthermore, rural households were poorer than urban (Zimmer & Das, 2014). In Malawi, the elderly are recognized as one of the vulnerable groups in the society (GOM, 2016).

In the qualitative data from Malawi, the elderly are perceived by themselves, and others, as lacking energy and relatively weaker and less productive compared to when they were younger. Difficulties that come with age, such as being weak and not being able to work as hard as previously, is the main limitation for the livelihoods of the elderly. They also informed us that they do not follow new methods of farming such as crop rotation and zero tillage due to lack of energy, and that they have reduced the variety of crops. As a result, productivity has decreased and problems of food security increased. An elderly farmer from Nkhwangwa describes the situation in the following words:

Our concern is mainly on health wise, we are not treated well by most of the people including doctors and nurses when we are sick because they think we are useless, and hence much attention is given to the younger generation. We also face problems of food insecurity because we have lost our energy for farming. (August 28, 2018)

Our quantitative dataset confirms that elderly throughout the three data collection rounds had the lowest maize yields. A similar situation has been reported

from neighbouring Tanzania, with Porter et al. (2013) suggesting that farming is too labour intensive for the elderly and that older people only cultivate half, or even less of their total land (Porter et al., 2013). Apart from being viewed as physically weak, the perceptions of the elderly are twofold. The first one highlights how elderly are perceived by themselves and other villagers as full of wisdom, someone to turn to for advice and therefore respected in the community, in line with a gerontocratic society. 'It feels good to be an old person as you receive respect from people' says an old farmer from Khasu (5 September 2018). A contrasting view of the elderly is that older persons practice witchcraft, and that any misfortune within the village is to be blamed on the elderly as described in the following quote:

It's very difficult and discouraging to be an elderly person in the community. Whenever I work hard and realize bumper yields, people label me as practicing witchcraft. If you don't work hard then you suffer and you don't have anyone to offer you support... There is a lot of stigma and discrimination in this community. Mostly, people consider elders as witches. Whenever misfortunes such as dry spell for instance befall on the community, people consider elderly people to be the master minds. (Interview with an old farmer in Nkhwangwa, August 28, 2018)

Some elderly therefore informed us that they feel alienated from the community. Outside of the study villages, numerous cases have been reported of elderly persons being harassed because of traditional beliefs and superstitions. Although the law does not recognize witchcraft, there have been media reports of elderly persons being accused of bewitching some people or withholding rains. In one extreme case, an old woman had her house burnt down on accusation of practicing witchcraft.

In contrast to the youth, the elderly do not report access to land as a constraining factor. Instead their opportunity space is limited first and foremost by their aging and lack of energy, and also their possibilities and willingness to adjust to new farming techniques.

Conclusion

Through the opportunity space lens, this study has explored youths' and elderly's participation in agricultural intensification in rural Malawi, and their perceived challenges to engage in an intensification process. The study has focused on the near

opportunity space, that is, the rural context in which the respondents are settled. Our results show that maize yields have remained low and stagnant during the study period, and throughout the timeframe the elderly who do not lack access to land have had the lowest yields. This is explained by their age and physical limitations. Within the youth group, yields have not improved during the three rounds of data collection, and the only slight improvement is found among the intermediate generation. With regards to maize yields, youth and elderly are not participating in any intensification process. The opportunity space to engage in the process is hampered by several factors. First, the area under cultivation has alarmingly decreased for all age cohorts during the study period. Further, the low use of chemical fertilizer and improved seeds among both youth and elderly suggest their limited participation in agricultural intensification and, at the same time, shows the possibilities for increased engagement. However, the individual opportunity to participate might be determined by financial constraints. Our study shows how the concept of opportunity space may have a wider use and not be limited to youth only. Rather, it provides a framework to analyse a specific group's opportunities and challenges within a certain context.

The study findings show that Malawi has potential to intensify agricultural production through a youthful population that is relatively better educated and willing to be involved in agriculture. However, this is bedevilled by policy limitations which do not provide clear and targeted support for the youth, and which do not consider the variations in aspirations and possibilities within the youth group. Upon completion or dropping out of school, many of the youth find it difficult to integrate systems which can make them useful and responsible members of society. At the same time, cultural beliefs and practices on inheritance do not only discriminate against female youth but also hinder early uptake and ownership of land required for investment and intensification. As the population of the youth increases and as the life expectancy of the elderly improves, the aspirations of the youth to inherit or own land may take longer and perhaps even get more complicated due to competition. Youth might instead start searching for alternative livelihoods and, depending on their social and geographical contexts, the opportunities will differ.

Without neglecting the individuals' social and geographical backgrounds as well as individual

aspirations, in this paper we have focused on opportunity space from a generational perspective. Clearly, the data from Malawi shows that while some factors in the nearby rural surrounding such as lack of infrastructure, poor market structures and access to extension services are challenging and constraining the opportunity space for agricultural intensification for all generations, other factors are more common within a particular age group. No matter the generational belonging, the issue of access to land is problematic in Malawi and, with the rapid population growth, we can expect even more challenges in the future. However, some of the elderly people pointed out that due to their physical limitations and small households they had enough land. For the youth, on the other hand, access to land is a major concern within their nearby opportunity space that may delay their chances to become independent young adults. The elderly's nearby opportunity space is found to be limited first and foremost by their own physical inability which severely affects the livelihoods of the elderly's households. Not only do they have the lowest yields but they also do have less crop diversification (Mvula & Mulwafu, 2018).

As Malawi remains rural and production is characterized by smallholder farming, smallholder farmers need to be emphasized in policy initiatives and programmes. Yet, differences exist within this group in relation to access to extension services, agricultural inputs and access to markets. Generational belonging and the aspirations specific groups have for better livelihoods need to be considered. This paper suggests that policies and programmes should be more nuanced to reflect the heterogeneity within the groups as well as context sensitive.

The results of this study point to the significance of understanding the cultural beliefs and practices regarding the role of different age sets in land management in society. Like many developing countries which are striving to maximize the land use and other resources for development, land tenure systems and inheritance traditions cannot be ignored. The Malawian case presents a paradox: the youth who potentially have the energy to use the land more productively do not have easy access to the resource. On the other hand, the elderly people who do not have the energy tend to control to a large extent access to land resources. Policy interventions meant to transform agricultural production need to pay greater attention to these dynamics operating in the Malawian rural setting.

Notes

1. In 2018 the definition of older persons included individuals 65 years and above, while the earlier censuses defined older persons 60 years and above. To compare with previous censuses all persons aged 60 years and above were included. However, if we use the new definition from 2018 census, the increase of older persons between 1987 and 2018 is 38.6%.
2. Dambo is a term used to describe flat, wetland areas that tend to be flooded during the rainy season but may retain moisture in the dry season. Dambos are different from dimbas, which are basically stream bank areas. (See Rodenburg et al., 2014 for further description on dambos).
3. We exclude the first phase of the study, since the area held under maize was only 0.13 ha and this creates artificially high yields.
4. The villages have been given pseudonyms to protect the identity of the respondents and to correspond with the system used in earlier publications.

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