Data from 32 household surveys in sub-Saharan Africa shows that crop and livestock production activities together constitute at least half of rural households’ total annual income.

Crop production contributes more to rural households’ total annual income than livestock production activities.

In some countries, the importance of income from on-farm activities – crop and livestock production – shows a clear association with expenditure quintiles, while in others, on-farm income appears equally important across socio-economic groups.
INTRODUCTION

This brief uses data from the FAO Rural Agricultural Livelihoods System (RuLIS) to estimate the contribution of income from crop and livestock production to households’ total annual income. The shares in total income are also analysed across expenditure quintiles. The brief aims at exploring the importance of income from on-farm agricultural sources in rural livelihoods. Each survey in the RuLIS pool is representative for both rural and urban areas, and the current analysis only focuses on rural households in 32 national household surveys from 16 countries in sub-Saharan Africa. The computation of total income includes all net revenue earned by members of a household from all income-generating activities, on-farm and off-farm, over one year. Since the household is the unit of analysis, income shares are calculated for each household first, and then the mean of the household shares of each activity is computed.

Households are classified as crop producers if they engaged in crop production in at least one season during a cropping year, and as livestock keepers if they reared domesticated animals such as cattle, sheep, goats, pigs, equine and poultry over the year preceding data collection.

RESULTS

Figure 1 shows that across all countries considered, more rural households are engaged in crop production than in livestock-keeping. The gap between the two categories is less than 10 percent in Senegal, Ethiopia, Kenya, Niger, Mali (2017) and Nigeria (2016), and largest in Sierra Leone (61 percent).

Further analysis of time series data from Ethiopia, Malawi, Uganda, Nigeria, Niger, Mali and the United Republic of Tanzania shows varying results in the proportion of rural households participating in crop production and livestock-keeping over time. In Ethiopia, Niger, Mali and the United Republic of Tanzania, participation in crop and livestock production activities decreased across the survey years.

In Malawi, between 88 percent and 93 percent of rural households produced crops from 2004 to 2020, while households with livestock declined from 68 percent in 2004 to less than 50 percent in both 2017 and 2020. This decline could be linked to extreme weather events that probably impacted crop and livestock production (Haghtalab, Moore, and Ngongondo 2019). In Uganda, the proportion of rural households engaged in crop and in livestock production does not present a clearly defined trend over time. However, the proportion of households engaged in crop and livestock production is relatively low in 2012 compared to the rest of the survey years, possibly resulting from shocks that impacted production outcomes.

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1 On-farm income sources include net earnings from crop, livestock, forestry and fishery production, while off-farm sources include agricultural and non-agricultural wage employment, self-employment in non-farm enterprises, public (includes social insurance and assistance) and private transfers (remittances) and other income sources (includes earnings from investments such as rental properties and in the financial sector). All income is net of input costs.
In all countries considered, over 70 percent of households engaged in crop production with the exception of Nigeria in 2016 and 2019 where 62 percent and 68 percent of rural households had crop production, respectively. In livestock production, over half of the households kept livestock in the majority of countries under analysis. In Sierra Leone however, only 25 percent of the rural households kept livestock. Livestock production in the country is mostly under a traditional system of management and the livestock population has mostly not recovered after their depletion as a result of the civil war that started in 1991 (Sesay, 2016).

In the United Republic of Tanzania, the proportion of livestock-keeping households fell from 80 percent in 2009 to 62 percent in 2013. The shift away from livestock-keeping could have resulted from increased pressure on grazing land due to increased human and livestock population, climate change and changing land tenure. The United Republic of Tanzania is one of the African countries with large livestock resources, but dominated by indigenous herds that are largely raised under a traditional open grazing production system (Allegretti et al., 2016; FAO, 2014; Michael et al., 2018; United Republic of Tanzania, 2015). However, the country’s livestock production sector is severely constrained by feed shortages, high mortality and high disease prevalence, among other constraints (United Republic of Tanzania, 2015). Figure 2 shows a wide variation in the share of income from crop production in total annual income. The share of income from crop production ranges from 22 percent in the Niger (2011) to 71 percent in Sierra Leone. In Sierra Leone, Côte d’Ivoire, Burkina Faso, Mozambique, Nigeria and Mali (2017), crop production accounts for at least half of the total annual income.

In Rwanda and the Niger (2011), the share of crop income in total annual income accounts for less than a quarter of the annual income despite that at least 90 percent of households participated in crop production. Rwanda is Africa’s most densely populated country and land is highly fragmented into small units (Ansoms, Verdoort, and Van Ranst, 2008; Bizimana, Nieuwoudt, and

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**Figure 1. Proportion of rural households engaged in crop and livestock production**

Source: Rural Livelihoods Information System (RuLIS), 2021.
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Ferrer, 2004): the land scarcity resulting from the high population density may likely cause the low share of income from cropping activities. Land consolidation policies were introduced in 2008 to encourage crop intensification (Chigbu et al., 2019).

In the Niger, crop income’s contribution to total income increased from 22 percent in 2011 to 36 percent in the subsequent survey conducted in 2014 despite a 6 percent drop in the proportion of rural households engaged in crop production. However, agriculture production in the country is increasingly affected by weather-related shocks, with severe droughts reported in 2004 and 2011 (FEWS NET and USAID, 2014). Overall, Nigeria has the lowest participation in crop production but crop income shares are at least 50 percent in total income.

**Figure 2. Share of crop income in total income and participation in crop production**

![Figure 2](image)


Figure 3 presents the share of income from livestock production in total income which is consistently lower than that of crop income, and ranges from 8 percent in the Niger (2014) to 33 percent in the United Republic of Tanzania (2013). In Cameroon and Burkina Faso, both in West Africa, livestock contributed 30 percent to total income but less than half of the households kept livestock. On the contrary, livestock’s share in total income in Ethiopia is between 27 percent and 31 percent, and over 80 percent of rural households kept livestock. Notably, livestock’s contribution to total income in Niger dropped by 9 percent between 2011 and 2014, but as earlier noted, the contribution of income from crop production over the same period increased by 14 percent after a severe drought in 2011 (FEWS NET and USAID, 2014).

**Figure 3. Share of livestock income in total income and participation in livestock production**

![Figure 3](image)
Among the countries with panel data, we find varying relationships between changes in livestock numbers and the contribution of livestock to total income. This scenario shows that, on one hand, increased contribution of income from livestock production to total income may be correlated to livestock numbers, while on the other hand, there is evidence of uncorrelation. For example, in the United Republic of Tanzania, livestock’s contribution to livestock-keeping households’ annual income increased from 21 percent in 2009 to 33 percent in 2013 and livestock numbers, converted to tropical livestock units (TLUs), increased from 2.1 TLUs to 3.0 TLUs. In Malawi, the share of livestock’s income in total annual income increased from 13 percent in 2004 to 17 percent in 2017, while the number of livestock changed marginally from 0.5 TLUs in 2004 to 0.6 TLUs in 2017. In Uganda, Ethiopia and Niger, our findings do not show a clear pattern in the relationship between the number of animals and livestock’s contribution to total annual income.

In the following Figures 4, 5 and 6, we present the share of income from crop and livestock production in total income across expenditure quintiles. Figure 4 shows a largely decreasing pattern in the share of income from crops from the lowest to the highest expenditure quintiles in most surveys. Poorer households therefore tend to depend more on income from crop production for their livelihoods.


Figure 4. Share of income from crop production in total income by expenditure quintile

2 The TLU conversion factors used are as follows: Large ruminants = 0.5, small ruminants = 0.1, pigs = 0.2, poultry = 0.01 and equines=0.45 (FAO 2011).
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A near uniform distribution of the crop income shares across the five quintiles in Ethiopia and Sierra Leone may indicate that crop farming scale with the expenditure quintiles, unlike in the other countries where better-off households tend to diversify away from crop production. In addition, the pattern may result in underdeveloped rural economies, where growth of the nonagricultural sector is limited by physical, financial, natural and human capital constraints, and thus the livelihoods of many households depend on agriculture (Osabuohien, 2020).

Figure 5 shows varying patterns in the distribution of livestock income in total income by quintile. These varying patterns are observed across countries and within countries’ different surveys. For example, in Burkina Faso, Mali, Mozambique and Rwanda, the share of livestock income increases from the lower to higher quintiles, indicating that investment in livestock in these countries, and thus production, is higher in the better-off households.

On the contrary, in Kenya, Ghana, the Niger, Nigeria, Sierra Leone and the United Republic of Tanzania (2011 and 2013), the share of livestock in total income decreases from the lower to the higher quintiles, which shows that in these countries, poorer households are more likely to rely on agricultural income sources, such as from livestock production, than better-off households. In addition, our data shows evidence that nonagricultural income sources - such as income from non-agricultural wage labour, self employment and public and private tranfers - contributes more to total income in better-off households.

In Cameroon, Ethiopia, Côte d’Ivoire, Malawi, Senegal and Uganda, the distribution of the share of livestock’s income across the expenditure quintiles does not follow a well-defined pattern. Livestock income therefore appears equally important across different socio-economic groups.

Figure 6 portrays a predominantly decreasing pattern in the share of income from both cropping and livestock production activities in total income. With the exception of Ethiopia, Malawi (2004 and 2017), Nigeria, Uganda and Rwanda, the contribution of on-farm income to total income decreases from the poorest to the better-off rural households, indicating diversification away from on-farm production activities by better-off households.

In their study on the patterns of diversification of income among rural households, Davis, Di Giuseppe, and Zezza (2017) found that in sub-Saharan Africa, agriculture played an important role in rural livelihoods regardless of the level of the countries GDP, and at the same time, an important share of rural households participated in non-farm (non-agricultural wage labor and self-employment) activities. In addition, the authors found that in nearly all the sub-Saharan Africa countries they analysed, at least 55 percent of the income was from agricultural sources (on-farm

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3 Total income includes income from forestry activities in Burkina Faso, Cameroon and Senegal. Income from fishing activities is included in total income in Burkina Faso, Cameroon, Côte d’Ivoire, Ghana, Malawi (except Malawi 2004), Mali, Senegal, Sierra Leone and Uganda (2010).
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and agricultural wage labour) and more than 50 percent came from on-farm sources (crop and livestock production).

**Figure 6.** Share of income from both crop and livestock production in total income by expenditure quintile

![Diagram showing the share of income from crop and livestock production in total income by expenditure quintile across different countries and years.](image)

REFERENCES


The Rural Livelihoods Information System (RuLIS) is a set of harmonized household- and individual-level data and indicators on different aspects of livelihoods, including crops and livestock production, off-farm and non-farm income generating activities, households’ composition and demographics, agricultural inputs, technology use, access to social protection, time use, shocks and migration. RuLIS currently includes information from 39 countries, with increasing data coverage in time and space as more micro-data becomes available. RuLIS aims to provide critical information for understanding medium- and long-term trends in the structural transformation of agriculture and rural economies; and for the design of policies that promote and accompany social and economic transformation and enhancement. RuLIS provides data on a wide set of indicators, cross-tabulated by rural vs urban areas, gender and other variables; and standardized variables at the household and individual level. For further information on RuLIS, and for accessing the data and indicators on the platform, please refer to http://www.fao.org/in-action/rural-livelihoods-dataset-rulis
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