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The Effect of COVID-19 on Welfare of Baobab Collectors in Rural Malawi

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Abstract

Restriction measures of the COVID-19 Pandemic have disrupted food systems and detrimentally affected welfare of smallholder farmers in Sub-Saharan Africa (SSA). Underutilised Plant Species (UPS) are non-trivial in ensuring stability of food systems in SSA. In this context, this study assessed the impact of the COVID-19 Pandemic on business activities, income and food security of baobab collectors in Malawi, using a primary dataset from 864 baobab collectors collected in February-March 2021. Descriptive statistics and bivariate probit model were applied in the empirical analysis. We find many changes in activities of the baobab collectors due to COVID-19. Collectors reported changes in the quantity collected, transportation options and costs (including labour costs). Further, they highlighted changes in the way meetings were conducted with buyers, training officers, and avoiding movements within and outside their villages. With regards to income shock and food security, more than half of the respondents (54%) experienced income shocks due to COVID-19 and at least 12% reported worsened food security during the pandemic as compared to the situation pre-COVID. Results from the bivariate probit regression show a strong correlation between collectors who suffered income shocks and food insecurity. Collectors who sold larger amounts of baobab were less likely to experience income shocks and worsened food security during COVID-19 pandemic. Households with male baobab managers had a higher probability to experience food insecurity and income shocks. Interestingly, knowing more traders increased collectors' probability of suffering from income shock and food insecurity. To navigate these challenges most collectors adjusted their dietary patterns (59 %) and reduced non-food expenditure (63%). These findings indicate that the on-going strategies for steering the recovery of food systems post COVID-19 should go beyond the conventional food systems by making targeted polices for UPS chains as well.

Keywords: Malawi, Baobab, bivariate Probit model, COVID-19, Food Security, income shocks
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Introduction

COVID-19 has been and continues to be a global threat to human health and social well-being. Governments implemented measures to curb the spread of virus including lock downs, limiting travel, abolishing public gatherings as well as school and businesses closure (Josephson et al., 2021). However, the full impacts of these restrictions on livelihoods especially in the global south are not fully understood. Studies on the effect of COVID-19 have majorly focussed on food security, poverty, and conventional agricultural value chains (Kansiime et al., 2021; Laborde et al., 2021). Yet, livelihoods in Sub Saharan Africa also depend on traditional value chains for livelihoods. In this paper, we analyse the effect of COVID-19 on the welfare of collectors of forest products, in particular baobab fruits, during the COVID-19 pandemic in Malawi. Like many other countries in SSA, the government of Malawi declared a state of emergency in mid-March 2020 due to COVID-19 and moved forth to implement some of the aforementioned measures to stem the spread of this disease (Matita & Chimombo, 2020). In particular, we analyse how the COVD-19 pandemic affected baobab collectors' business, behaviour, food security status, income, and how they responded to these effects.

Material and Methods

We use primary data collected through a household survey in the southern and central regions of Malawi in February and March 2021. These regions were purposively selected due to the intensity of baobab collection. Respondents were interviewed from four districts namely, Mangochi, Dedza, Neno, and Salima. A total of 864 baobab collectors were interviewed. Data was collected on their personal characteristics such as age, enterprise specific information such as quantities of baobab collected, COVID-19 related questions regarding shocks, changes in behaviour, coping strategies, and information on their food security status. In particular, we employ the Food Insecurity Experience Scale (FIES) for measuring the household food security status (FAO, 2017).

Results and Discussion

COVID-19 and baobab collectors' behaviour

Results show that approximately four out of every ten collectors were constrained with regards to market access, access to hired labour, and access to extension services (Table 1).

Table 1: Percentage of collectors reporting changes in behaviour due to COVID-19

Variable	Percent
As a result of COVID-19 restrictions the collector had to….	
…Avoid going to the market to find buyers	43
…Avoid contact to cooperative members and officials	37
…Avoid hiring labourers to help with baobab collection	42
…Avoid contact with other collectors	42
…Avoid contact with training officers	42
…Avoid contact with traders	42

COVID-19 and baobab collectors' activities

Collectors were also asked to compare the current level of operation of the baobab enterprise and selected performance indicators to the previous season before COVID-19 (Our findings reveal that baobab collectors reported decreased levels in the various baobab activities. In particular, close to 40% of baobab collectors reported decrease in baobab prices, income, demand, and number of baobab traders. Our results are consistent with the findings of Hirvonen et al. (2020) among vegetable farmers in Ethiopia.

Table 2).

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Table 2: Percentage of collectors reporting changes in the baobab enterprise due to COVID-19

Variable	% **Decreased**
Compared to the average of the last 2 seasons, how would you rate this season's….	
…Baobab prices just after harvest	34
…Baobab income	44
…Demand of baobab just after harvest	38
…Baobab transportation options	16
…Number of baobab traders just after harvest	34
…Turnover (quantity of baobab collected)	36
…Number of buyers available	30

Note: Percentage represents proportion of collectors who reported changes due to COVID-19

COVID-19, income shock, and food security

Following Kansiime et al. (2021), we use the Food Insecurity Experience Scale (FIES) to measure the effect of COVID-19 on food security status of households. We also sought to understand what factors influenced income shocks and food security levels among baobab collectors. Results show that more than half of the baobab collecting households (54%) reported that their income was affected due to COVID-19 and about 12% reported worsened food security status. We further employ a bivariate probit model that simultaneously estimates the determinants of income shock and food insecurity as a result of COVID-19.

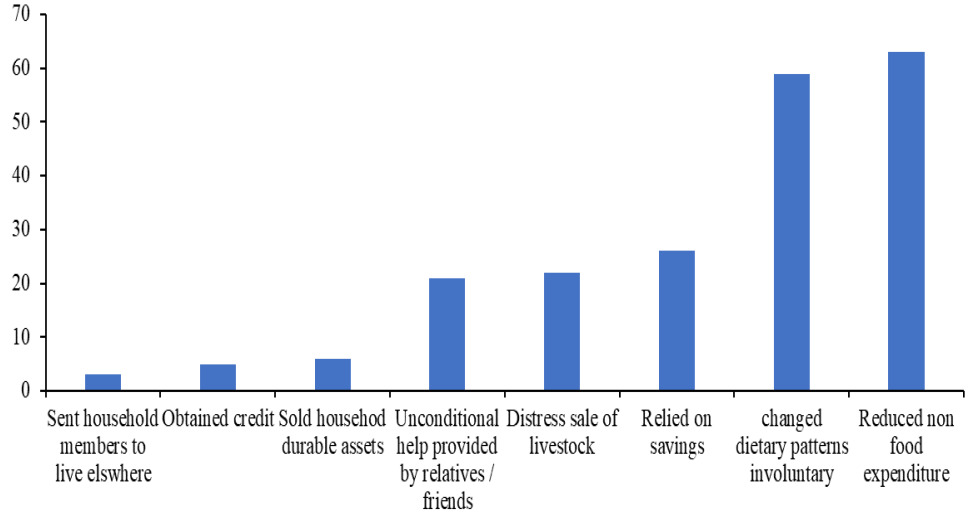
Table 3: Biprobit regression results on the determinants of income shocks and food insecurity due to COVID-19

VARIABLES		**Income shock**		**Food insecurity**	
VARIABLES	**Unit of measurement**	**Coefficient**	**Robust std. error**	**Coefficient**	**Robust std. error**
Male	1=male	0.202**	0.093	0.303***	0.101
Age	Years	-0.002	0.004	0.010**	0.004
Education level	Years of education	0.016	0.016	0.015	0.018
Household size	Number	0.021	0.022	-0.014	0.023
Group membership	1=member	-0.093	0.097	-0.268**	0.112
Duration of stay in village	Years	-0.000	0.000	0.000	0.000
Number of traders known	Number	0.223***	0.034	0.080***	0.026
Access to credit	1=Yes	-0.196*	0.117	0.252**	0.119
Wealth index	Index	-0.069**	0.027	0.100**	0.048
Value of baobab sold	Malawian kwacha	-0.075***	0.019	-0.094***	0.019
Constant		0.460	0.287	-0.439	0.289
athrho		0.239***	0.065		
Rho		0.234***	0.062		

Wald test of rho=0: chi2(1) = 13.3545; Prob > chi2 = 0.0003; *** p<0.01, ** p<0.05, * p<0.1

Results in Table 3 above show that income shock are highly correlated with food insecurity. In particular, households that had male baobab managers were more susceptible to income and food security shocks than households with female managers. Households that had access to credit and higher levels of asset index were less likely to be affected with income shock but more likely to be susceptible to food insecurity. Further, collectors who had a high value of baobab sold were less likely to be affected with income shock and food insecurity as a result of COVID-19.

COVID-19 Coping Strategies



Our findings from Figure 1 show that majority of baobab collectors responded to the effects of COVID-19 by changing their dietary patterns and reducing non-food expenditure.

Figure 1: COVID-19 coping strategies

Conclusions and Outlook

Using primary survey data from Malawi we analysed the effect of COVID-19 on behaviour, income, and food security of baobab collectors. Results show that COVID-19 had an effect of baobab collectors' access to markets, traders, and access to labour. Further analysis using a biprobit regression model showed that households that experienced income shocks due to COVID-19 were also more likely to be food insecure. We find that households with a male household head, access to credit, and higher value of baobab sold had significant effects on income shock and food insecurity due to COVID-19. In particular, being male increased the likelihood of the household suffering food insecurity, access to credit had an inverse relationship with income shock but was positively correlated with food security, and finally, the value of baobab sold was negatively associated with food security and income shocks. Our results imply that it is important for COVID-19 recovery strategies to go beyond the conventional value chains and also focus on other chains such as forest products. It is also important to note that different baobab collecting households are variably affected by COVID-19, thus, having best-fit rather than "one size fits all" policies is recommended.

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