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## Assessment of Avocado Producers' Food Security Status: - In Case of Wolaita and Kembata Tembaro Zones

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### **Abstract**

#### **Background**

At the worldwide, regional, national, and local levels, there's a direct correlation between food insecurity and poverty. The household's security situation is at its most terrible level in rural Ethiopia. Due to various circumstances, ensuring food security in Ethiopia is becoming a significant concern. Therefore, the study aimed to identify determinants of food security status of avocado fruits producers in the study area.

#### **Methods**

A simple random sampling technique was employed to take 385 sample household of avocado fruits producers. Both quantitative and qualitative types of data were collected. Primary data were collected through interview schedule, focus group discussion, and key informant interviews. Household Dietary Diversity Score (HDDS) was used to assess the household's food security status and a binary logit model was employed to identify the determinants of food security status of a household.

#### **Results**

The result of the study exposed that 147(38.2%) and 238 (61.8%) of the households of the study area were food secure and insecure, use of household food insecurity access scale measurement. Access to extension service, sex of the household head, number of extension agent contact per months and quantity of avocado fruits produced were significant positively at 1% whereas family size and age were significant negatively at 1%.

#### **Conclusion**

Hence given that the majority of households experienced food insecurity, it is important to choose the right stakeholders to encourage household participation in various income-generating activities and to provide a timely and sufficient supply of agricultural technologies in order to improve the current food security situation.

**Keywords:** Food security, Determines, HDDS, Binary Logit, Wolaita Zone, KT Zone

### **Abbreviations**

CSA: Central Statistical Agency; FAO: Food and Agriculture Organization; FGD: Focus group discussion; FSP: Food security program; HFIAS: Household Food Insecurity Access Scale; HHs: Households; MOARD: Ministry of agriculture and rural development; SNNPRS: Southern Nation Nationalities Peoples Regional State; SPSS: statistical package for the

## Introduction

Agriculture is main economic pillars of the Ethiopian economy and the overall economic growth of the country is highly dependent on the success of the agriculture sector [1]. Most rural communities in Ethiopia depend on agriculture as the source of food and income [2,3]. Nevertheless, it is characterized as small scale with low productive and vulnerable to weather and production-related shocks [4]. In 2019, the agricultural sector in Ethiopia contributed 33% of GDP and the sector remained the top-export earner for the country with close to 82% of all exports coming from it [5]. Other current food crises in Ethiopia are the failure to invest in sufficient local food production and the collapse of pastoral livelihoods. As a result, hunger and poverty are prevalent, which leads farmers to be chronically food insecure and around 10 million chronically food-insecure people are targeted to PSNP [2,3]. Food security is crucial element for the long-term growth of communities, with a particular emphasis on rural areas. Without a doubt, "food security" is essential to society's safety.

According to Anderson and Elisabeth (2015), in the developing world like Ethiopia, different challenges face rural communities to be food secured like multifaceted variability of rainfall and temperature [6]. Also, According to Cochrane (2017), during 2015/16, a large segment of the population in Ethiopia was vulnerable to drought as a result of food insecurity [7]. To give remedy for food security problem, social protection program by the governmental and non-governmental organizations was implemented [8]. The one of the mechanisms to reduction of food waste in general and post-harvest losses in particular is considered as one of the mechanisms in ensuring food security mainly in developing countries especially following the 1974 first World Food Conference that identified reduction of post-harvest losses as part of the solution in addressing world hunger [9]. Not only the governmental and non-governmental organizations but also local communities tried to resolve the problem of food security through diversifying their assets, income, and activity [10]. However, the issue is still widespread in the nation, especially in the study area. As noted above, numerous empirical studies have been carried out in Ethiopia, but this study was started because there was a lack of specific information regarding the status of food security and the factors that determined food insecurity avocado fruits producers in the study area. Up order to fill in the gaps in knowledge on the state of food security and the variables affecting households in food-insecure areas, a study was conducted. Therefore, the study was to asses' the food security status and its determinants of avocado fruits producers in the Wolaita and Kembata Tembaro Zones

## Data and Methods

### Description of the Study Area

The study conducted in SNNPR of two zones, namely Wolaita and Kembata Tembaro Zones. Wolaita and Kembata Tembaro Zones are two adjacent zones among the 13 zones in the Southern Nations Nationalities and Peoples Regional (SNNPR) state of Ethiopia. Wolaita Sodo is an administrative center of the Wolaita Zone; Durame was the administrative center of Kembata Tembaro Zone. The Wolaita Zone has a total area of 4512 km<sup>2</sup>, administratively divided into 22 districts (locally termed woredas). Based on the 2007 Census conducted by the Central Statistical Agency this Zone has a total population of 2,473,190; with an area of 4,208.64 square km; whereas Kembata Tembaro Zone was subdivided into eight districts and five registered town. Kembata Tembaro zone based on the 2007 Census conducted by the CSA, this Zone has a total population of 1,080,837, of whom 536,676 are men and 544,161 women; with an area of 1,355.89 square kilometers. This study was conducted in of the major avocado fruits producing area from wolaita zone; Damot Weyde and Sodo Zuriya distrcts, and from Kambata Tambero; Kacha Bira and Tembaro districts of SNNPR.

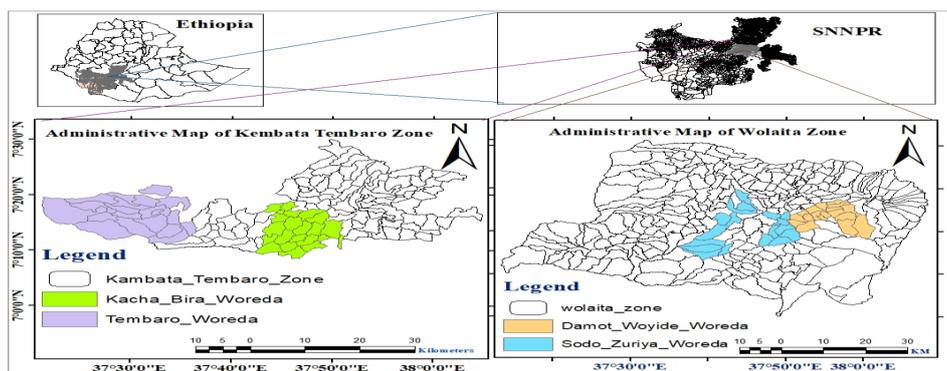


Figure 1: Location of the Study Area

### Data Source and Sampling Procedure

Both primary and secondary data were used for this study. Primary data were collected from randomly selected avocado fruits producers from eight rural kebeles in the study area. Primary data were collected by structured and semi-structured questionnaires and by trained enumerators using Computer Aided Personal Interview. Secondary data was taken by reviewing secondary sources from published and unpublished documents of Central Statistical Authority, district agricultural and rural development office. In addition, journals and websites were visited to generate relevant secondary information focusing on the objectives of the study. Multi-stage sampling techniques were employed to select avocado fruits producers. In the first stage, four districts, namely Damot Weyde and Sodo Zuriya distracts from Wolaita

Zones, and Kacha Bira and Tembaro districts from Kembata Tembaro zones were randomly selected from the avocado fruits producing districts of the two zones. In the second stage, a total of eight avocado fruits producing kebeles or districts were selected by using simple random sampling method from each of the four selected districts. In the third stage, 385 farm households were randomly selected based on the probability proportional to their total size of numbers.

To obtain a representative sample size for cross-sectional household survey, the study employed the sample size determination formula given by Kothari (2004)

$$n = \frac{z^2 pq}{e^2} = \frac{(1.9)^2 0.5 * 0.5}{0.05^2} = 385$$

Where n is the sample size, z is the inverse of the standard cumulative distribution that corresponds to the level of confidence, e is the desired level of precision, p is the estimated proportion of an attribute that is present in the population and q = 1-p [11]. The value of z is found from statistical table which contains the area under the normal curve of 95% confidence level.

## Methods of Data Analysis

### Descriptive Statistical Analysis

Depending on the type of data at hand, the study employed both descriptive statistics and econometrics methods to analyze the determination of food security status and its determinants of avocado fruits producers in the study area. Analyses of the data were carried out by using Statistical Packages for Social Sciences (SPSS version 20). Household dietary diversity scores and econometrics models were used to analyze the data collected. The type and quantity of food items consumed by the household for seven consecutive days were collected using weighed records method. Then it was converted to a kilocalorie and then divided to household size measured in adult equivalent (AE) and the number of days. Following this, the amount of energy utilized in kilocalories by the household was compared with the minimum subsistence requirement per adult per day (i.e. 2200 kcal).

## Variables that Determine Households Food Security

### Dependent Variable

Food security: Households' calorie intake or acquisition is the number of calories, or nutrients, available for consumption by household members over a defined period of time. Then the results would be compared with the minimum subsistence requirement per AE per day (i.e. 2200 kcal). Households who consume below this minimum requirement (2200 kcal per AE per day) were categorized as food insecure and those households who consume above the threshold were considered as food secure.

### Household Food Security Status (HFINS)

It is a dichotomous dependent variable in the model taking a value 1 if the household is food secure and 0 otherwise. Household's food security status was determined by comparing total kilocalories consumed in household per adult equivalent per day with the daily minimum requirement of 2,200 kilocalories per adult equivalent per day. Households getting 2,200 Kcal/AE/seven day and above was considered as food secure and otherwise food insecure.

### Independent Variables

It is hypothesized that a household food security at any time is influenced by the combined effects of a number of factors. The independent variables that are expected to have association with the household food security were selected based on available literature. Any explanatory variable having negative coefficient was expected to reduce food security of the household whereas explanatory variable found to be positive were increased the food security of the households. Therefore, the major variables expected to have influence on the household food security were explained below:

Description of variables	Measurement	Expected sign
Sex of household head	Dummy (1female, 0 male)	+
Age of household head	Continuous (years)	+/-
Education level	Continuous (year of schooling)	+
Family size	Continuous (Adult equivalent)	-
Landholding size	Continuous (ha)	+
Distance to market	Continuous (walking hour)	-
Quantity of avocado produced	Continuous (quintal)	+
Off/non-farm participation	Dummy (1=yes, 0=no)	+
Livestock ownership	Continuous (TLU)	+
Income from avocado sold	Continuous (ETB)	+

**Table 1: Description of Variables Hypothesized to Influence Food Security Status**

## Result and Discussion

### Food Security Status Analysis

This section presents the measurement of food security status results and its determinants. In the first sub-section presented the descriptive result of food security measurement and the second sub-section covers the model results of factors affecting food security of smallholder farmers in the study areas.

### Food Security Status of the Households

The households' food security status was measured by direct survey of consumption. Data on the available food for consumption, from home production, purchase and /or gift/credit/wage/salary in kind for the previous seven days before the survey day by the household was collected. Then the data were converted to kilocalorie and then divided by household size measured in AE with seven days. Following this, the amount of energy in kilocalorie available for the household is compared with the minimum subsistence requirement per adult per day (i.e. 2200 kcal).

The result from the sampled 385 respondents indicated that 147(38.2%) and 238 (61.8%) of the households of the study area were food secure and insecure, respectively. The maximum and minimum kilocalories consumed by a single adult in a day for food secure households were 2993.1880 and 2210.2200 kcals, and 2195.8460 and 1252.7730 kcals for food insecure households. The mean calorie intakes by food secure and food insecure sampled households were 2579.492136 kcals and 1634.234609 kcals. The difference is significant at 1% significance level. The standard deviations for food secure and food insecure households were to be 198.9860798 and 177.1163642 respectively (Table 2). The mean daily calorie intake per day per AE was 1995.15111kcal which is below the national average of daily requirement of 2200 kcal per day per adult equivalent for active and healthy life.

Daily Energy Available per AE in (Kcal)	Food secure (N=147)	Food insecure (N=238)	Total sample (N=385)	t-value
Maximum	2993.1880	2195.8460	2993.188	-35.607***
Minimum	2210.2200	1252.7730	1252.7730	
Mean	2579.492136	1634.234609	1995.15111	
Standard deviation	198.9860798	177.1163642	495.846133	

**Source:** Own computation results based on survey data, 2022.  
\*, \*\* and \*\*\* show significance levels at 10%, 5% and 1%, respectively.

**Table 2: Household Food Security Status**

### Demographic and Socio-economic Characteristics of Sample Households

The different characteristics of sample households in the study area were compared to see if there are significant differences between food secure and food insecure groups. These include, sex of the household head, age of the household head, household family size, educational level household, livestock holding, off/non-farm income, total amount of avocado fruits producing at given year, access to market information, total annual income from avocado fruits, dependency ratio, distance from market, access to credit and frequency of extension contact.

Table 3 showed that the discrete variables such as sex of household head, access to market information, access to extension contact, credit access and off-farm participation for sampled households.

The survey result indicated that 70.1% of male households were food secure and 89.5% of male households were also food insecure whereas 29.9 % of female households were foods secure and 10.5 % of female households were food insecure. The chi-square value for this variable showed that there was a significant difference between the two groups in terms of sex of the households. In addition, smallholder households who participated in off/non-farm activities showed that about 7.5% were food secure but 67.6% were food insecure. There was statistically significant proportion difference between food secure and food insecure households in terms of sex at 1% probability level. Moreover, about 92.5% sampled households who did not engage at any off/non-farm activities were food secured but 32.4 % were food insecure. The chi-square value also indicates that that there was significant difference between the two groups in terms of off/non-farm activities. There was statistically significant proportion difference between food secure and food insecure households in terms of off farm income at 1% probability level. The table bellows shows that the result obtained regarding access to market information shows that about 63.9% were food secure but 61.3% were food insecure. In addition, about 36.1% sampled households who did not got market information access were food secured but 38.7 % were food insecure. The chi-square value also indicates that that there was significant difference between the two groups in terms of off/non-farm activities. There was statistically significant proportion difference between food secure and food insecure households in terms of access of market information at 5% probability level.

		Food insecure (238)		Food secured (147)		Total sample (385)		X <sup>2</sup>
Variable	Category	No.	%	No.	%	no.	%	
Sex of the household head	Male	213	89.5	103	70.1	316	82.07	13.317***
	Female	25	10.5	44	29.9	69	17.92	
Off-farm income	Yes	161	67.6	11	7.5	172	44.7	22.081***
	No	77	32.4	136	92.5	213	55.3	
Access to credit service	Yes	19	8	13	8.8	32	8.3	0.032
	No	219	92	134	91.2	353	91.7	
Access to Extension contact	Yes	162	68.1	10	6.8	172	44.7	0.262
	No	76	31.9	137	93.2	213	55.3	
Market information	Yes	146	61.3	94	63.9	240	62.3	8.995**
	No	92	38.7	53	36.1	145	37.7	

**Source:** Own computation results based on survey data, 2022.

\*, \*\* and \*\*\* show significance levels at 10%, 5% and 1%, respectively

**Table 3: Descriptive Summary of Dummy Variables**

The result of descriptive statistics shows that there exists a significant mean difference between food secure and insecure households. Continuous variables including age of household head, educational level of household head, family size, dependence ratio, distance to market, livestock ownership (TLU), number of times extension contact per month and income from avocado fruits crops were significantly influence household food security status at various probability level (Table 4).

The mean age of sample households was 45.95. Similarly, the mean age of food secure and insecure household heads was 42.46 and 48.11, respectively. The t-value shows that there is significance difference between the two groups associated with this variable at less than 1 % probability level. The mean family size including the household head for the sampled household was 7.86. The mean family size for food secured and insecure household was 6.8 and 8.5 respectively. The t-value result revealed that there is a significant family size difference between food secure and insecure households at 1% significant level (Table 4).

The mean educational level of the sampled household heads was 6.27 with a standard deviation of 2.66. The mean educational level of the household heads was 8.73 (SD=1.85) and 4.75 (SD=3.07) for food secure and food insecure households, respectively in the study area. The statistical test of the mean educational level of the household heads shows that there was statistically significant difference between food secure and food insecure households at 1% probability level (Table 4.26). This showed that food secure households had achieved more grade level than food insecure households which may help them to reduce the risks of food insecurity. The distance to the central market is on average 3.07km. Table 4.26 indicates that the distance from the market for food secured households is 2.25km whereas for food insecure households are 3.58 km. The t-value result revealed that there is significant difference between food secure and insecure households with regard to the distance to central market at 5% significant level.

Average frequency of extension contact of the sampled households was 2.67 with a standard deviation of 0.784. The average frequency of extension contact was 3.16 with the standard deviation of 0.75 for food secure and 2.366 with the standard deviation of 0.804 for food insecure households, respectively. Therefore, the mean frequency of extension contact by food secure households was significantly higher than the food insecure. The difference was significant at 5% significance level (Table 4.23).

The mean dependency ratio of the sample households was 106.16 with the standard deviation of 77.85. The mean dependency ratio for food secure sampled households was 115.3 with the standard deviation of 70.86. For food insecure households, the mean dependency ratio was 100.53 with the standard deviation of 81.49. The mean dependency ratio of food insecure households was significantly higher than food secured households and the difference was significant at 1% significance level (Table 4.24).

The mean annual income got from avocado fruits of the sampled household heads was 5577.5Birr with a standard deviation of 3347.2. The mean annual income generated from avocado income from sampled household heads was 7505.9Birr (SD=3323.1) and 4386.5Birr (SD=2760.2) for food secure and food insecure households respectively. The statistical test of the mean annual income of the household heads shows that there was statistically significant difference between food secure and food insecure households at 1% probability level (Table 4.24). This showed that food secure households had achieved more annual income from avocados fruits than food insecure households which may help them

to reduce the risks of food insecurity. In addition to this livestock is a key resource in farm households where the farming households support their livelihood. From the survey result indicated that the sampled households have on average 3.04 livestock. Food secured and insecure households have on average 3.43 and 2.87 TLUs with a significance mean difference in relation to this variable (Table 4).

Variables	Food insecure (238)		Food secured (147)		Total sample (385)		T-value
	Mean	Std.err	Mean	Std.err	Mean	Std.err	
Age of the house hold head	48.11	6.774	42.46	4.998	45.95	6.74	-76.7***
Education level HH	4.75	3.017	8.73	1.85	6.27	3.266	-38.5***
Family size HH	8.5	1.269	6.8	1.13	7.86	1.466	76.2***
Dependence Ration	100.53	81.494	115.3	70.86	106.16	77.85	26.6***
TLU	2.87	1.1355	3.43	1.54	3.804	1.334	40.0***
Income from avocado(Birr)	4386.5	2760.2	7505.9	3323.1	5577.5	3347.2	-22.2***
Extension contact month	2.366	.804	3.16	0.75	2.67	0.874	-14.2**
Distance to nearest MKT	3.58	1.249	2.25	1.047	3.07	1.34	12.8**

**Source:** Own computation results based on survey data, 2022.  
 \*, \*\* and \*\*\* show significance levels at 10%, 5% and 1%, respectively

**Table 4: Descriptive Statistics of Continuous Variables**

### Determinants of Household Food Security Status

Estimates of the parameters of the variables expected to determine the households' food security status were presented in Table 5. The goodness-of-fit was tested by the Log likelihood ratio (LR) test. The result showed that the chi-square value was 343.42 and the  $p > \chi^2$  was 0.000; this means that  $\chi^2$  is statistically significant and the model displays a good fit. The Pseudo of the model is also 0.68, implying that 68% of the variation in the model was explained by the independent variables. This verifies that the model has a good fit to the data and explained significant non-zero variations in factors influencing households' food security status.

Probit regression model was used to identify the determinants of households' food security status in the study area. Accordingly, variables hypothesized to have influence on the household's food security status in were fitted in the model. Therefore, out of 13 variables included in the model, nine (7) variables were statistically significant. Namely, sex of household head, age of the household age, distance to nearest, household size, quantity of avocado fruits produced, access to extension contact and frequency of extension contacts within month.

### Sex of Household Heads

It had significant and positive relationship with the household food security status. It was significant at one percent probability level. The result showed that male headed households were more food secure than female headed households. Other factors remaining constant, food security of male household headed increased by 21 percent than female headed households. The possible explanation was the differential access to production resources where male had more access to production resources like cultivated land than females. This result similar with the result of done with by Greenwell and Pius (2012).

### Age of Household Head

It had significant and negative relationship with the household food security status. It was significant at 1% probability level. The results explained that household head affected food security negatively. If age of a person gets older, the ability and strength of the person gets weaker so that there is more probability of that household to be food insecure. If the age of the household increased by one year the probabilities of food securities decreased by 1.7 percent. This result similar with Indris (2012) found out that age of household head affected food insecurity positively.

### Distance to Market Center

It has been found to be negatively related with food security and significant at less than 5% probability level. It was expected that households nearer to market centers had better chances to be food secure than those who are away from market centers due to the reason that households nearer to market center have the probability of selling their produce and purchase food from market. As distance from market center becomes far and far the probability of households to sell their product and purchase supplementary materials becomes less which resulted in low probability of household being food secure. If market centers increased by 1km the food security decreases by 24%. The result of this study is similar with study findings of Fekadu et al. (2015), Mekuanint (2015) and Abayneh and Belay (2017).

## Quantities of Avocado Fruits

This was found to have a significant influence and positive relationship with household food security at 1% probability level which implies that the likelihood of food security increases with producing avocado fruits. Amount of avocado production is positively and strongly associated with higher income, higher rate and intensity of use of purchased other goddess and services and higher yield and hence improved food security status of households. Therefore, those households who produce more amount of avocado fruits crops become in a better position for food security than those who didn't produce avocado crops. Holding other things constant, if avocado production at household level increased by 1kg food security increases by a12.6%.. This study result resembles the study by Fekadu et al. (2015).

## Family Size

This is measured in adult equivalent and influenced food security of the household negatively and significantly at 1% significance level. This might be, households in rural areas with large family size mainly composed of nonproductive members could face difficulty in ensuring food security due to high burden levied on active labor and less food availability to each person within the household and ultimately end up with difficulty to achieve food security. This implies larger household sizes require increased food expenditure and competition for limited resources. The survey result indicated that as family size increases by one person, the probability of household to be food secure decreases by a 17.1%. This result resembles with the findings of Sisay (2012), Fekadu et al. (2015), Mekuanint (2015) and Abayneh and Belay (2017).

## Access to Extension Services

As hypothesized, it was positively related with food security and statically significant at less than 1% probability level. This is because farm households who have the opportunity of accessing extension services would build their capacity to generating knowledge and the better the market information the farmers have about the products' marketing; the more output would be sold. If an extension services: access increased by one-unit, other things are constants food security increased by 84%

Frequency of the number of extensions contact: It had a significant and positive relationship with household food security at 1% probability level. This implies that the probability of being food secured households increases with access to frequency of extension contact. The marginal effect result show that, as compared to household who did not access to frequency of extension contact, the probability of the access to frequency of extension contact households to become food secure was higher by 113.4 percent. More frequent extension contact enhances households' access to better avocado crop production techniques, improved input as well as other production incentives, and this helps to improve food energy intake status of households (Table4.26). This finding is in line with the result of.

```

. probit FSSTAT Sex AGE EDUC DISMKT QUNAVOCADO OFFARMIN TLU INCAVOCD FSIZE ACCCRED MKTINF ACCESEX EXECONMOT
Iteration 0: log likelihood = -256.00467
Iteration 1: log likelihood = -93.881869
Iteration 2: log likelihood = -84.777729
Iteration 3: log likelihood = -84.294025
Iteration 4: log likelihood = -84.293582
Iteration 5: log likelihood = -84.293582

Probit regression              Number of obs   =       385
                              LR chi2(13)     =       343.42
                              Prob > chi2      =       0.0000
Log likelihood = -84.293582    Pseudo R2      =       0.6707
    
```

FSSTAT	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
Sex	.8344467	.3120875	2.67	0.008	.2227664 1.446127
AGE	-.0700956	.0248422	-2.82	0.005	-.1187855 -.0214058
EDUC	.0802309	.0510753	1.57	0.116	-.0198749 .1803367
DISMKT	-.2420787	.1165593	-2.08	0.038	-.4705307 -.0136267
QUNAVOCADO	.0016642	.0006298	2.64	0.008	.0004298 .0028986
OFFARMIN	.4997045	.3499736	1.43	0.153	-.1862312 1.18564
TLU	-.0200026	.0808996	-0.25	0.805	-.1785629 .1385576
INCAVOCD	.0000194	.0000526	0.37	0.712	-.0000837 .0001226
FSIZE	-.6785008	.1002932	-6.77	0.000	-.875072 -.4819297
ACCCRED	.1405482	.3898767	0.36	0.718	-.6235961 .9046925
MKTINF	-.3578774	.2688709	-1.33	0.183	-.8848546 .1690998
ACCESEX	.840267	.3170495	2.65	0.008	.2188614 1.461673
EXECONMOT	.5324726	.1394191	3.82	0.000	.2592161 .8057291
_cons	2.08143	1.939498	1.07	0.283	-1.719916 5.882777

```

. mfx
Marginal effects after probit
y = Pr(FSSTAT) (predict)
= .16922384

```

variable	dy/dx	Std. Err.	z	P> z	[	95% C.I.	]	X
Sex	.2105407	.08308	2.53	0.011	.047708	.373373		1.17922
AGE	-.017686	.00591	-2.99	0.003	-.029265	-.006107		45.9506
EDUC	.0202432	.01278	1.58	0.113	-.004803	.045289		6.26753
DISMKT	-.0610793	.02969	-2.06	0.040	-.119267	-.002891		3.07065
QUNAVO~O	.0004199	.00017	2.54	0.011	.000096	.000744		866.883
OFFARMIN	.1260813	.08683	1.45	0.146	-.044103	.296266		1.55325
TLU	-.0050469	.0204	-0.25	0.805	-.045029	.034935		3.08429
INCAVOCD	4.90e-06	.00001	0.37	0.713	-.000021	.000031		5577.55
FSIZE	-.1711937	.0323	-5.30	0.000	-.234501	-.107886		7.85714
ACCCRED	.035462	.09861	0.36	0.719	-.157802	.228726		1.92208
MKTINF	-.0902967	.06696	-1.35	0.177	-.221532	.040939		1.37662
ACCESEX	.2120092	.07922	2.68	0.007	.056747	.367271		1.55325
EXECON~T	.1343491	.03734	3.60	0.000	.061161	.207537		2.67013

Source: Own computation results based on survey data, 2022.  
\*, \*\* and \*\*\* show significance levels at 10%, 5% and 1%, respectively

**Table 5: Determinants of Food Security Status of the Household**

## Conclusion and Recommendation

### Conclusion

The capacity of communities to handle the problem of food insecurity is decreasing every day. The result of the study exposed that 147(38.2%) and 238 (61.8%) of the households of the study area were food secure and insecure, use of household food insecurity access scale measurement. According to the Household Dietary Diversity Score (HDDS) results, the majority of sample respondents experienced are food insecurity. The food insecure households were unable to buy the food they needed on a daily basis with the money they made from their main subsistence farming and non-farming activities. Food security strategies that boost food availability, food access, and fortify emergency responses should be developed since the majority of households lacked adequate food security. Various socioeconomic factors influenced the household's level of food security. These socioeconomic characteristics were found using the binary logit model. They were affecting the food security status of the household either positively such as, Sex of the house hold, quantity of avocado produced in quintals, access to extension contact, and number extension agent contact per months of number of days or negatively such as, age of the household head, distance to market in kilo meter, and family size) at different significance levels. Households with aged, large family size, and away from market centers household heads are more likely to be food insecure than those with young aged, smaller family size and nearest to market from residential house household heads. Overall, household-related factors that affect personal production, stocks, and household purchasing power of food in the research area influence household food insecurity [12-14].

### Recommendation

- Improve the access to road and control over strategic resources like land, livestock, cash crops, and other household possessions
- Increasing awareness to the point where it has an impact on family planning in rural households.
- It was reasonable to strengthen inter-resettlement initiatives in order to improve food security by allocating sufficient amounts of agricultural land and other natural resources for food production and other forms of income.
- Encourage the private sector to expand employment prospects in agriculture, industry, handicraft, and business to create more jobs, especially in rural areas.

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### **Authors' Contributions**

All authors participated in data collection, supervision, analysis, description and drafted the manuscript. Also, all authors analyzed logistic regression part and revised the manuscript and participated in data supervision, clark, logistic regression analysis, discussion writing and manuscript preparation. All authors read and approved the final manuscript

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### **Availability of Supporting Data**

Not applicable.

### **Competing Interests**

The authors declare that they have no competing interests.

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