



Determine of Ginger in Punjab Pakistan



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Abstract: This study employs Multiple Linear Regression to analyze factors influencing ginger cultivation in Punjab. Notably, increased availability of newly introduced seeds positively impacts ginger supply. Livestock ownership also correlates with higher ginger production, suggesting household asset programs could aid in addressing supply concerns. However, revenue from non-ginger sources negatively affects supply. This research highlights the need for informed decision-making by farmers, emphasizing the roles of extension agents and stakeholders in providing guidance. The findings underscore the potential of seed distribution and livestock-focused initiatives to enhance ginger production and offer avenues for sustainable agricultural practices.

Key Words: Ginger, Farmers. Determinants, Supply

JEL Classification:

Introduction

Background

Pakistan's economy is heavily reliant on agriculture, which is thought of as the foundation of the country. A. Hussain (2022). Water and fertile land are Pakistan's two primary natural resources. Agriculture in Pakistan employs roughly 42.3% of the labor force and accounts for 18.9% of the GDP. Arshad, M. U., Zhao, Y., Hanif, O., & Fatima, F. (2022). Ginger is one of the oldest spices known since many years, people have used it both as a spice and a medicinal. Ginger is a native of South East Asia, Australia, Japan,

tropical India, and Indo-Malaysia are also included serving as the primary source of variation. (Purseglove, 1972). In Pakistan, ginger is used in countless dishes and remedies in both its fresh and/or dried forms. Ginger is mostly produced and exported by China and India. Jamaica, Nigeria, Sierra Leone, Thailand, and Australia are further significant producers (Yiljep et al. 2005). There is evidence in the literature that suggests ginger was brought to Pakistan and possibly cultivated as early as the 13th century. It is commonly grown in Pakistan despite the country's poor climate. From 1901 to 2021, precipitation in Pakistan averaged 287.75 mm,

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with a record a record-breaking 420.43 mm in 1944 and an average of 187.52 mm per year, a record low. Ali, A. (2022). The crop has also been a focus of the present development plan and policy in order to help resource-poor farmers achieve their family goals of food security and poverty reduction. Accessing the right markets for farmers' produce and resulting increase in marketable excess appear to favor production that is market-oriented. Therefore, marketing operations have an inherent productive value because they give goods and commodities additional time, place, and possession utilities. Marketing raises customer satisfaction from any given quantity of production through exchange as well as the technological procedures of storage, processing, and transportation. Good agricultural and rural development is dependent on effective agricultural and rural marketing, especially when it comes to a sustained growth in agricultural productivity, increase in farmer income and capacity for food security. Rehman, A., Ma, H., Ozturk, I., & Ulucak, R. (2022).

In the context of economic development, markets may also incentivize profit-maximizing individuals to create novel forms of technology, products, supply chains, and exploitation channels Sohail, H. M., Li, Z., Murshed, M., Alvarado, R., & Mahmood, H. (2022). Markets can also be used to extract surpluses and move oral resources between sectors, most typically sectors, from the agricultural to the non-agricultural. Additionally, market growth and expansion can increase demand in a number of different ways. For instance, markets offer a source of both profitable work and revenue-generating activities.. Abbasi, K. R., Hussain, K., Haddad, A. M., Salman, A., & Ozturk, I (2022).

Statement of the Problem

After industrial revolution of the 1970s, agriculture has become the country's second-most vital industry for boosting GDP. It provides the primary basis for life and growth, accounting for 18.5% of GDP and accounting for 38.5 percent of all jobs all of the people in

the country who are employed Khan, A. W., Subhan, S., Abro, A. A., & Shahid, R (2022).

As a result, the export market is dominated by agricultural goods or commodities. The Ministry of Agriculture reports that the crop sector continues to contribute the most foreign currency, with coffee accounting for the lion's share. The Ministry of Agriculture recognises that spices are important to international commerce. Ginger is a popular spice whose demand has been steadily rising over time Shehreen Gull, R. (2022).

According to statistics provided developed by the Ministry of Agriculture and Rural Development, The Southern Nations produced 99% of the crop ginger, Regional State for Nationalities and Peoples (SNNPRS) and From the Oromia National Regional State, around 1% were present. Recent statistics show that 3.0 million tonnes of ginger were produced worldwide from 327 thousand hectares, yielding 8.2 tonnes per ha on average. India is the world's biggest producer, but China is the leading exporter. Ginger exports have reached a global total of \$855,000,000 in 2017, expanding at a rate of 17% annually. leading importer of Pakistan and the USA grow ginger. Kin, N (1999).

Despite the growing demand for ginger, present ginger growers' ability to generate money is not as high as the region's enormous potential such a motivating. The main factor, among others the farmers' apparent inability to access markets appears to be therefore decreasing the motivation to engage in economic transactions Ali Mubarak, (2020).

Additionally, without an effective, responsive, and integrated High-performance market mechanism that has the potential to increase output, rural income, and available foreign money by adopting more cutting-edge production techniques. Therefore, this study places a focus on the factors that affect the availability of ginger in Punjab Pakistan. Adebowale, O. J., & Adeyanju, A. A. (2022).

The Study's Objectives

Principal Goal

This study aims to analyze the factors that affect ginger availability in Punjab, Pakistan.

Particular Goals

To look at the factors affecting the supply of ginger,

To determine the manufacturing challenges and opportunities for ginger.

Objectivity of the Study

Understanding how the Ginger Marketing Flow is Performed, Operated, and effectively would be achievable thanks to the study's data in Punjab Pakistan. Finding the input that influences ginger production, marketing management, and ginger may be done by looking at the chain's structure and returns efficiency and effectiveness of the marketing chain. The produce's transit via the advertising medium it was acknowledged at each stage, from the producer to the numerous marketing actors. Comparisons of different ginger market chains can shed light on the chain's strengths and weaknesses and provide advice for which link in the chain needs to receive extra care marketing development.

Producers, retailers, governments, and NGOs may all benefit from this study's findings. groups that want to become involved.in the marketing of ginger Therefore, this research may aid in the development of strategies that will enhance the nation's production and marketing of ginger.

Study's Purpose and Limitations

The study's analysis of the several factors in the Punjab region of Pakistan affect ginger production. Key influences on the availability of ginger on the market were examined. Therefore, the issues on the producer's side have received extra attention. However, the study did not go into great detail about the issues on the demand side. Therefore, as they are equally significant, the marketing elements of ginger should be further researched.

Methodologies

An explanation of the research areas

After 11 months of cultivation, Pakistan's first-ever ginger harvest was evaluated. Despite the fact that it is in such high demand, ginger cannot be grown domestically in Pakistan, so the entire harvest must be imported. Punjab's economy depends heavily on agriculture, which accounts for about one-fourth of the province's GDP. Additionally, the province accounts for two-thirds of the overall agricultural output of the country. The industry more than 16 million employees, or 45% of the Punjab's labour force and its primary source of employment source of about a quarter of women's labour force. Agricultural opportunities are abundant. It is frequently grown in Pakistan under unfavorable conditions. From 1901 to 2021, precipitation in Pakistan averaged 287.75 mm, with a record high of 420.43 mm in 1944 and a record low of 187.52 mm annually Ali, A. (2022). Thus, the primary economic activity of the country is crop production along with livestock raising.

Pakistan's population is made up of 115.88 million males and 109.32 million females. Men account for 51.46 percent of the population, while women make up only 48.54 percent. There are almost 6.57 million more men than women in Pakistan. In terms of the number of women to men, Pakistan ranks 186th out of 201 countries and territories Muhammad, R. (2022).

With a total size of 20.63 million hectares, Punjab overtakes Assam as the second largest province in terms of land area in the nation. For 86% of the total area, the status of land use is known, whereas 14% of the land is unreported. Only 72% of the land is suitable for farming because another 14% is not suitable for agriculture due to either being completely fertile or being occupied by infrastructure. 10.81 million hectares, or 53% of the total, are net sown, or farmed at least once annually. A region that is not used for cultivation for a full year is classified as current fallow on 9% of the land. 8% of the land has a cultural waste designation, which denotes an area that has

not been farmed for more than three years and is a part of cultivated area. It is discovered that the remaining 3500 acres of land cannot be farmed. The primary economic activity is agriculture, particularly crop production. Where the production of ginger dominates, followed by Cereals including maize, cotton and others, as well as root crops like potato, garlic taro sweet potato, etc. Ahmed, M. U., & Hussain, I. (2022)

Figure 1



Table 1

Area, Yield, And Production of Ginger in Pakistan Between 2008-17

Year	Area (ha)	Production (tonnes)	Yield (tonnes/ha)
2008	195	95	0.487
2009	269	111	0.413
2010	247	115	0.466
2011	22	8	0.364
2012	249	113	0.454
2013	280	124	0.443
2014	282	126	0.447
2015	291	130	0.447
2016	268	120	0.448
2017	270	122	0.452
Total	2373	1064	4.421

Source: FAOSTAT, Production, Crops <http://www.fao.org/faostat/en/#data/QC>

The (Appendix Table 1) shows that a total of approximately 2373 acres of land is designated for ginger in the 2008 to 2017. And the production of total in this areas 1064 tonnes. The total of production was 1064 in 2008, 95 tonnes in 2009, 269 tonnes in 2010. In 10 years more production in 2015 and less production in 2011. In other words, a sampling method based on proportions approach was used to

Figure 2



Sampling Design and Sample Size

Punjab, a state of Pakistan, has the most territory set aside for ginger. Then, from 2008 to 2017, a comprehensive and distinct A directory of regional ginger farmers was compiled. Last but not least, the number of ginger farmers in each area was used to calculate a proportional sample size for the probability sampling the total in acres and Production (tonnes) was chosen.

choose 2373 ha from a total area for usage in the production of ginger during a ten-year period.

Types of Data and techniques

The study's data came from both primary and secondary sources. Personal observation, key informant surveys, and producer surveys make

up the core sources. In order to gather information on the ginger quantity and quality, variety recognition, input use, pricing, buyer goals, and market. Visual observation and interviews with purchasers and sellers (producers) who participated in the ginger transaction were used to gather this information. To gather information on marketing channels, costs, and other factors, a semi-structured timetable that has been examined in advance the cost of ginger and any limitations or issues with ginger advertising, etc. A key informant survey was conducted to determine the prospects and barriers to the production of ginger production effectiveness, financial availability, marketing constraints, and accessibility to extension services, and Information about the market is accessible, and marketing expenses. Additionally, secondary information regarding market costs, amenities, and services was gathered compiled with help Agriculture Office of the Woredas; also available from other places.

Techniques for Data Analysis

The data evaluation strategy used was the econometric approach in order to suit the study's information needs.

Supply Function

Numerous research looked into the elements that primarily influence availability of farm produce for sale. In the Alaba Siraro district, Wolday (1994) used cross-sectional data to determine, among other things, the most influential factors on Teff, maize, and wheat. were examined for their marketability, as well as the relationship between agricultural cereals with a reliable commercial supply to gauge the effect of reasons for the food supply that is marketed. He used multiple regression analysis with grain. as explanatory factors, dummy and continuous variables. He discovered through this study that among the independent factors, market access, output volume, and family size all had an impact on the amount of grain that can be sold commercially.

He looked into the connection between rice harvestable for sale and the supply-determining factors, and his research revealed that rice's postponed price amount, current price, consumption and output supply of marketable rice at the farm level had been influenced by family level in the neighborhood. Using cross-sectional data once more, Kindei (2007) undertook research to identify the key elements influencing Punjab's marketable sesame supply. The research employed multiple linear regression to evaluate the market supply of sesame and the postulated explanatory factors.

And according to his research, the amount of productivity with sesame, The marketable supply of sesame seed was positively impacted by the use of modern inputs, the number of languages spoken by the family leader, the number of oxen owned, and the timing of sesame sales. He used numerous regression models in his study to determine that the yield of ginger, the education of households, and the delayed price of ginger all had an impact on the marketable supply of ginger. Regression models are typically used in recent studies to estimate the supply function. Additionally, a Linear A number of regressions will be used in this research to examine the supply of ginger in Punjab Pakistan.

Econometric Model Specification

The multiple linear regression model, according to Greene (2003), is defined as $Y = f(\text{price, Price, ginger output, accessibility to extension services, educational attainment, market knowledge accessibility, and ginger input, and sexual orientation of the household's head, credit policy, age, etc.})$. The supply function's specification in an economic model the estimation of matrix notation is

$$Y_i = \beta_0 + \beta_i X_i + U_i$$

Where Y_i = is the quantity of ginger that is sold on the market.

β_0 = the constant intercept

β_i = a vector of estimated explanatory variable coefficients

X_i = a list of explanatory factors

U_i = disruption term

Factors Affecting Ginger's Marketable Supply in Punjab Pakistan

The total supply at a given period may be affected by carryover stocks, imports, and other factors in addition to current output. It is impossible to account for all potential influences on the situation the quantity of ginger available to households. But in this study, an effort was made to assess the factors that determine the supply of ginger in Punjab Pakistan. Which factor impacts and in what ways was the primary activity. Therefore, it is necessary to explain the hypothetical circumstances that might affect the amount of ginger supplied. The next section provides an explanation of the key factors that are anticipated to have an impact on the quantity supply of ginger.

Definition, Hypothesis, and Variable Construction

The data includes details required to ensure that metrics of efficiency and social, economic, demographic, and environmental outcomes at the farm level are similar throughout marketplaces for ginger across a variety of scales (local, regional, and national).

Dependent Variable

Supply of ginger (GMQi): This continuous variable shows the amount of ginger that is brought to sell. Other explanatory variables also depend on it factors may be correlated with it either positively or negatively (Gujarati, 2003).

Independently varying (Explanatory) Factors

These are the factors that are speculated to have an impact on the quantity of ginger supply. The choice of these variables must take into account the possibility of specification error, which could limit the model's ability to empirically explore economic phenomena, either by the exclusion

either the addition of a few helpful variables or a few unimportant ones.

Land size (SA): the land area farmers total owns. It is a constant variable using hectares as its unit. They can use it to fund a variety of crops, including maize, tomatoes, & potatoes, etc. However, it is evident that with bigger land sizes, the amount of acreage that may be set aside for ginger grows. (2008) (Rehima). Therefore, it is anticipated that this variable has a positive relationship with the amount of ginger market supply.

The AIS, or The constant variable, expressed as the quantity of enhanced seed, is quintals. Undoubtedly, improved seed is more prolific than regional varieties (2008) (Woldemichael). As a result, it is anticipated that this variable will boost supply and market participation.

Production of ginger experience (EGP): This is the length of time that ginger has been grown; It is a continuous variable that is believed to be advantageous. Increasing the supply on the market.

Age of the household head (AgHH): This constant variable has an age range. Age is a substitute indicator of a household's farming expertise, according to Rehima (2006). It is believed that older households use resources wisely, which will have a positive effect on the marketable supply.

Family Size (FS) is an ongoing variable expressed in adult equivalents. The presence of a working population within the home, which influences farmers' decisions on market participation. Since labour serves as the basis for production, it is expected that labour availability and supply volume are positively correlated. Family size, however, may have a favourable or unfavourable impact on the use of the market and the marketable surplus of food crops Larsson, E. (2022).

Education of the household head (EdHH): It is anticipated that In terms of the formal education the family head received, intellectual capital, or education will have a favourable impact on sales decisions. But occasionally, due to cultural and socioeconomic factors, education has missed

opportunities in other businesses (Lapar et. al., 2002). Therefore, it is impossible to predict with certainty how education will affect market participation and sales volume.

The household's gender Head (SxHH): This variable is a fake one with the values 1 for men and 0 for women. Obviously, in mixed farming, both men and women contribute to agricultural production. Men typically put forth more labour while gardening, pulling weeds, etc. Women also help with weeding, using compost as fertiliser, and other household tasks. However, men predominantly engage in these activities. Therefore, it is anticipated that households led by men participate more in the ginger market than those headed by women, and vice versa.

Credit availability (ACr): One of two ways to conceptualize this the following represents a dummy variable that can take the value 1 if the data is available, or 0 if it is not. The first issue is that having more debt from other sources may prevent you from having the free collateral you need to obtain loans for market-selling operations. In this case, the supply volume and market participation are presumably to suffer as a result. The second scenario's current debt may have originated by using credit to fund earlier investment and manufacturing decisions, which may indicate a larger desire to sell. In this case, it is likely that the loan amount will have a positive effect on farm households' choices about market participation and sales volume. It is therefore impossible to predict with accuracy the implications of credit availability Rehima (2006)

Number of extension visits (ExVis): This variable is measured by the quantity of extension visits the extension agent undertakes. The family's intellectual capital grows as a result of the visits of extension agents, which leads to an increase in ginger production and a transfer of resources from the factory to the market. The choice to enter the market and the amount of sales are thus directly impacted by the number of extension visits.

Another dummy variable, this one having the values 1 = yes and 0 = no, is accessibility to market data (MI). Farmers depend their marketing choices on their understanding of market pricing, and markets with poor market integration may transmit inaccurate price information, resulting in ineffective product movement. Therefore, market involvement and marketable excess should have a positive correlation with market information. Better information on food marketing activity significantly increases the likelihood that potential selling households will participate in the market Nguyen, P. M. (2022).

If the assumptions of the Classical Linear Regression model (BLUE), then the parameter estimates of the OLS model may not be Best Linear. It is thus important to comprehend the degree to which the variables affecting ginger supply in the research area are multicollinearity and heteroscedasticity. Therefore, before fitting major variables into the mode between the discrete elements that have a substantial impact on the estimate parameters, it is imperative to examine these concerns among the continuous variables and see the link. Gujarati (2003) states that multicollinearity refers to the various strong correlations that exist between the explanatory variables and the dependent variable. Multicollinearity, on the other hand, happens when the explanatory

For continuous data, the Variance Inflation factor can be used to spot the multicollinearity problems variables $(VIF) = \frac{1}{1 - R_j^2}$ R_j stands for each coefficient in a regression's for calculating the auxiliary or subsidiary regression's coefficient, and is used as a diagnostic statistic continuous independent variable X. As a general rule, if a variable's VIF value is more than 10, which will occur if R_j^2 reaches 0.9, there is a significant amount (Gujarati, 2003) of multicollinearity. The Variance Inflation Factor (VIF) as a result was used in this study to determine how multicollinearity the explanatory variable continuous supply function variables. The dummy variables also used the Contingency Coefficient (CC) in the same manner. On the

other hand, the study will conduct a test for heteroscedasticity. Test of Breusch and Pagan of heteroscedasticity, one of many test statistics, was employed particularly for its ease of use. Breusch and Pagan therefore developed a Lagrange Multiplier test for the following claim:

$$\sigma_i^2 = \sigma^2 (\alpha_0 + \alpha' Z_i)$$

In this instance, Z_i is an independent variable vector. If $\alpha = 0$, It is homoscedastic in the structure of the model. The test was run using an easy regression: Sum of squares explained in the regression of $\frac{e_i^2}{(e_i^2/n)}$ on Z_i .

The standard t-test or F-test can be used to test the null hypothesis.

Conclusions and Results

Production Challenges and Prospects for Ginger

Productivity growth is being driven by production that is focused on the market. Given the level of ginger production currently, there may be a number of obstacles to productivity. As a result, it should be evident in both the commodity's manufacturing and marketing. Farmers' production restrictions may be included under the "production side constraints" heading, whereas the marketing side restrictions to the marketing restrictions of traders. The "production side constraints" category may include limitations on farmers' production, while the "marketing side constraints" category side limits to the traders' marketing restrictions. As a result, the prospects may be technological, institutional, or policy-related.

Production and Marketing Restrictions for Farmers

According to the focus group discussion, irregular rainfall, a small land holding, issues with soil fertility, Lack of oxen, lack of seasonality in the roads, theft, a supply and demand issue, widespread credit fraud, a dearth of market data, and ginger output and productivity in the research area are among other issues, including productivity itself. Regarding the scale case, sample farmers, particularly in Punjab different district, have complained that the traders in the local market there are obviously taking advantage of them. Steal weights (2-5 kg out of 100 kg).

As a result, traders in this area also rob farmers of 3 kg. As for the farmers, when they (farmers) get aware of this, traders start to bargain up on weights. Demand is related to price and quality either directly or indirectly. The farmers admitted that there have been periods in the recent past when no one has purchased their produce, such as ginger. Frequently discarded it in the markets, while others completely stopped producing. It's probable that the countries who were in need of ginger did not want to purchase ginger because of how expensive it is, according to the exporters not meet their standards for quality. Additionally, despite the fact that the majority of farmers indicated that they have received price information, accessibility to market data. Farmers also emphasized the lack of loan availability. Additionally, growers require credit for inputs like ginger seed.

Production Chances for Ginger

As a cash crop, ginger is grown in Pakistan. It is export to other countries for sale. The research area has the greatest advantage for growing ginger when the soil, temperature, or agro climatic conditions are favourable.

Table 2.

Pakistan Exported Processed Ginger Between 2007 and 2017.

year	Quantity (Tonnes)	Value Us \$	Export Price us\$	Trade deficit
2007	121	288	2380	24.25
2008	193	361	1870	24.76
2009	284	756	2662	28.10

year	Quantity (Tonnes)	Value Us \$	Export Price us\$	Trade deficit
2010	198	489	2470	37.95
2011	349	685	1963	50.35
2012	294	662	2252	32.10
2013	149	377	2530	34.95
2014	184	521	2832	47.57
2015	263	727	2764	63.17
2016	335	857	2558	58.48
2017	406	996	2453	69.62
Growth rate %	6.39	8.25	1.86	10.23

Trade, crops, and livestock products; FAOSTAT

<http://www.fao.org/faostat/en/#data/TP> NS denotes a trend that is not considered significant at the 5% level.3.2. Prospects of Ginger Production

As a cash crop, ginger is grown in Pakistan. it is export to other countries for sale. The research area has the greatest advantage for growing ginger when the soil, temperature, or agro climatic conditions are favourable.

Factors Affecting Ginger Supply

Table 4 lists the factors that affected the predicted marketable surplus of ginger. Only the head of the family (SxHH), "formal education of household head" (EdHH), "access to credit" (ACr), and "access to market information" (MI) are dummy variables among the remaining 11 independent variables that affect the supply of ginger. There are continuous variables, as shown in the table.

Table 4

The Multiple Linear Regression Model's Dependent and Explanatory Variables are Described.

Variable	Description	Type	Value
GMQ	Amount of ginger sold in the market	Continuous	Quantity (qt) of ginger sold
EGP	Production of ginger experience	Continuous	How many year
SXHH	a household's head's sex	Dummy	0= female, 1= male
AgHH	Age of household head	Continuous	Number of years
EdHH	formal education of the head of the household	Dummy	0= otherwise 1= yes
NOF	No of Family member	Continuous	Adult equivalent
LvStck	Total livestock	Continuous	TLU (exclude oxen
SA	Size of land	Continuous	Hectares of land
AIS	Size of land cultivated	Continuous	Quintals of seed
Lab	Production of ginger requires labor	Continuous	Number of labor
ACr	Access to credit	Dummy	0= yes, 1= otherwise
ExVIs	Extension visit	Continuous	Number of extension visit
MI	Access to market information	Dummy	0= yes, 1= otherwise
Incothr	Any other income	Continuous	Earnings in thousands (ETB), excluding ginger

Findings from the Multiple Linear Regression Model (MLRM)

Three variables the quantity of livestock (LvStck), the quantity of improved seed (AIS), and other income (Incothr) were shown to be

statistically significant after performing several linear regressions (Table 5). Multicollinearity among the explanatory components and heteroscedasticity were examined prior to including the significant variables in the model. As a result, the variance inflation factor

(VIF) was utilized to analyze the multicollinearity among the continuous explanatory factors, and the contingency coefficient was employed to examine the link between the dummy variables. The fact that all of the VIFs were below 10 further proves that there was no severe multicollinearity concern. The contingency coefficient also shows that the dummy explanatory variables have no significant link with one another. Additionally, the Breuch-Pagan/Cook-Weisbrg heteroscedasticity test revealed

Land Size (SA): It has had a favourable impact on the supply of ginger to the market, as has been predicted thus far. As a result, an increase of one unit (or one ha) in the quantity of land set aside for ginger would result in an increase of The quantity of ginger that was brought to market was 11.1 qt. This illustrates that if farmers set aside more land for ginger, The quantity of ginger produced is projected to increase, which will then probably result in an increase in the amount that is marketable.

Production of ginger experience (EGP): The element is favorable. correlated with the quantity of ginger delivered to the market, as was previously expected. A little rise in ginger output years would result in An rise of 1.1 qt in ginger sales. The market received additional quintals of ginger since it is believed that households with experience are more productive than those without expertise.

Utilized Introduced Seed (AIS): At a 1.0% significance level, introduced variety seed was significantly and favorably used, as expected. influenced the quantity of ginger that was sold. The addition of one quintal of introduced variety seed resulted in An rise of 2.2 qt in the amount of ginger sold on the market. The implies that the newly introduced kind of seed is by far the most as a result of being more productive than the native variety seed Farmers who used it more frequently increased the marketable surplus in that case.

Table 5

The Results of the Multiple Linear Regression findings

Variables	Coefficient	Std.Error	T-value
EGP	1.2	0.7	1.2
SxHH	6.4	8.2	0.9
AgHH	1.2	1.1	1.1
EdHH	0.6	1.3	0.5
FS	-3.6	3.4	-1.2
LvStck	7.8	3.2	2.3
SA	11.2	12.3	0.8
AIS	2.3	0.7	3.6
Lab	7.8	4.8	1.7
ACr	11.8	8.1	1.6
ExVis	0.4	0.6	0.7
MI	4.4	8.8	0.4
Incothr	-0.51	0.2	1.71
Cons	-31.2	30.5	-1.2

Significant at a significance level of 1%, **= at 5%, and ***=10%.

Conclusion And Implication for Policy

Conclusion

The study has placed the proper attention on the variables that determine the amount of ginger supplied to markets. Using a semi-

structured routine that has been tested Group discussions and interviews were the two main strategies used to get the data. The investigation of the markets has benefited greatly from firsthand observations and prior understanding of the areas. Additionally,

additional research on ginger has greatly benefited from secondary information from the agriculture markets office of the woredas. The study employed the Multiple Linear Regression Model to look at the variables affecting the supply of ginger. The model's regression results revealed that the quantity of enhanced seed accessible and animals owned had a strong beneficial impact on each other. Ginger was provided, while income came from other sources. (Avoid ginger) significantly worsen the effect.

Policy Implications

The following policy conclusions can be drawn from the study's findings as we advocate for promoting ginger's growth and supply to the market.

1. The regression model's findings indicate that increasing household wealth in general and livestock ownership in

particular will probably assist raise increasing productivity and ginger production as a result its salable excess. The amount of ginger supplied was significantly influenced (in a good way) by livestock keeping, another significant factor emphasis should be placed on developing the Farmers' capacity to keep animals (such as raising access to credit, etc.).

2. Since money from sources other than ginger has adversely impacted the amount of ginger given, growers should compare and contrast when comparing revenue from sources other than ginger sales. They can quickly decide which the best side is by doing this. The function of extension once more agents and other interested parties who work in education and It is crucial to guide the farmers.

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Source: FAOSTAT, Trade, Crops and Livestock Products
<http://www.fao.org/faostat/en/#data/TPN>
Simplest that the trend is not significant at the 5% level of significance