Regional and Business Studies (2011) Vol 3 Suppl 1, 257-263
Kaposvár University, Faculty of Economic Science, Kaposvár

FARMERS' APPROACHES AND OPINIONS ON KIWI FRUIT AS AN ALTERNATIVE CROP TO HAZELNUT IN TURKEY: THE CASE OF ORDU PROVINCE

Rüveyda KIZILOĞLU
Gaziosmanpaşa University, Faculty of Agriculture, Turkey
ruveyda--p@hotmail.com

ABSTRACT

Turkey is the most important hazelnut producer in the world. It accounts for 70% of the total world hazelnut production alone, despite decreases in recent years. Hazelnut production is spread across 33 provinces in Turkey, mostly in the Black Sea region. About 395 thousand farm families engage in hazelnut production in about 540 thousand ha.. Hazelnut production is the only source of livelihood for 61% of hazelnut producer families. In hazelnut production Turkey is followed by Italy, the USA, Iran, and China. However none except Italy is a serious competitor for Turkey. Ordu province is the most important production area in Turkey, with a 30% share in total hazelnut production. In Turkey, hazelnut production has been supported since 1962. Nevertheless, governments have taken some political measures to prevent excess production since 1989. In order to balance the supply and demand, establishment of new hazelnut plantations and rehabilitation of old ones have been banned with the Code 2844 issued in 1983. Moreover, farmers have been supported for alternative crops in plain areas since 2003. Kiwi fruit is an alternative crop in the Black Sea region, which offers favorable conditions for its cultivation. However, farmers' opinions and views on kiwi production are of importance regarding the planning of hazelnut production in this region. In this study, hazelnut producers' opinions and approaches to kiwi fruit production as an alternative were investigated in order to guide future support policies.
Keywords: Kiwi, Production Cost, Behavior of Farmers, Binary Logit

INTRODUCTION

Turkey is the most important hazelnut producing country in the world. In recent years the production of hazelnut in Turkey has declined to an extent but it still produces 70% of the World total production. Hazelnut is grown in 33 Provinces although the production is concentrated in the Provinces on the Black Sea Region. Approximately 395 thousand families are engaged in hazelnut production on 540 thousand hectares of land. This corresponds to 2 million population. Hazelnut is the only source of income for the 61% of the farm families in Trabzon, Giresun and Rize Provinces. Italy, Spain, USA, Iran and People Republic of China are also major hazelnut producing Countries. On the other hand France, Greece and Russia produce hazelnut to a lesser extent. Italy is considered a major competitor of Turkey in hazelnut export. Rize Province is the most important area for hazelnut production which constitutes 30% of the total production. Akçakoca, Giresun and Trabzon areas

follow Rize in that regard. Hazelnut production is one of the most important agricultural activities and sources of income for most families in the Black Sea Region. Hazelnut production has been being supported since 1962. But the production has been increasing more than the market can absorb. Since 1989, the Governments have taken some measures to curb the production. But these measures have not been very effective. In 1883 a law number 2844 was enacted to ban the establishment of new hazelnut gardens. Later on another law was enacted stipulating that as of 2003, compensation be given to those who dismantle their hazelnut plots in the plain areas. Similarly, alternative plants were supported in plain areas where hazelnut gardens were dismantled. Kiwi production has been being promoted in these areas as an alternative product. The amount of consumption of kiwi fruit in Turkey is 60-70 thousand tons whereas the production is only 12 thousand tons. This shows that there is no marketing problem for kiwi fruit. Consumer's behaviors towards the alternative products need to be determined. In this study, the behaviors of the consumers towards alternative products will be examined.

In the study area, unemployment level is higher than the nation's average, the only source of income is hazelnut production and there is a big need for employment opportunities for young people. All these factors call for a substantial increase in the income of small and medium size hazelnut farms. In this connection kiwi fruit has been being promoted as an alternative plant in Rize Province.

MATERIAL AND METHOD

The material for the study was mainly obtained from questionnaires conducted within the Central District of Rize Province. On the other hand some secondary data have been taken from the documents of the Provincial Directorate of Agriculture and published material on the subject.

Method

Data Collection

Cross Section Method was used in the parts covering the farm enterprises (*Aytaç*, 1985). The study covers the 2008-2009 production period. Personal Interview method was used to obtain data by questionnaires. The questionnaires were prepared and ratio sampling method was used to determine the sample size for the questionnaires (*Çiçek and Erkan*, 1996).

Data Analysis

Working period for labor has been determined as 8 hours per day. The questionnaires were filled out by the researcher in person during the interview. The questionnaires were designed to determine the cost of kiwi fruit as the alternative crop to hazelnut. The objective of this study is to determine the need for labor, input usage, profitability, cost and benefit, net and gross profit in the farms where alternative kiwi fruit is produced. This study will produce a reference document for those authorities who are involved in decision making positions.

LOGIT analysis with multiple variables was used to determine the factors that affect the decision of the farmers regarding their desire to receive or not to receive support for alternative crop in Rize Province Central District. *LOGIT and PROBIT models* are used in analysis in which dependent variables have dummy values. In these models intermittent variables within probability distribution become continuous (*Greene*, 1997). In the study, willingness to receive support or not which is a continuous variable was turned into an ordered variable.

The coefficients in *LOGIT model* indicate the level of probability to accept an event or not.

The general functional form of the logistic functions (LOGIT) is as follows (*Gujarati*, 1992);

$$F_i(\beta X_i) = \frac{\exp(\beta xi + \varepsilon i)}{1 + \exp(\beta xi + \varepsilon i)} \quad (1)$$

F (βXi)= Index function (the level of receiving alternative crop J=0 for those who do not take and J=f1 for those who take)
β= Coefficient vector of explanatory variables.
Xi= Explanatory variables that represent the characteristics of the producers.
εi= error term
Probability of receiving alternative crop support: $P_i =$
P_i = Probability of dependent variable
e= Natural logarithm with 10 base value, approximately 2,7182.
$Zi = \beta X iZi = \beta 1 + \beta 2X2$

The probability of not receiving alternative crop support (1-Pi) is as follows:

$$\frac{Pi}{1-Pi} = = e^{zi} \quad (2)$$

The natural logarithm of the above formula which indicates the betting to receive the alternative crop support is as follows:

$$L_i = \ln \frac{Pi}{1-Pi} = z_i = \beta_1 + \beta_2 X_2 \quad (3)$$

The logarithm of betting ratio L is linear not only according to X but also population coefficient. L is called Logit and the logit model stems from comes from above formula (*Gujarati*, 1992). The answers to the questions that shows the importance that the consumers attach to the characteristics of the products has been received by lickert scale of 5. Explanatory variables need to be summarized when their number is too high to mention. The summary was done by factor analysis and these factors were used in LOGIT analysis. The factors were derived from the observed variables. They can be estimated as the linear component of observed variables:

$$F_j = \sum_{i=1}^{p} \left[W_{ji} X_1 + W_j X_2 + W_{jp} X_p \right] \quad (4)$$

W_i: Factor score coefficient
P: number of variables (*Norusis*, 1988)

RESULTS AND DICCUSSION

Kiwi is a perennial crop. In the questionnaires, it has been determined that the establishment period is 3 years and economical life of the crop is 20 years.

The need for labor and machine as hours has been shown in *Table 1*. The labor cost represents the daily wages in the area. Machine draft cost also was calculated in accordance with the unit machine cost in the area (*Table 2*).

Table 1

Seasonal labor requirement for kiwi production (hour/decar)

		Establishment Period	Production Period
Cultivation and Planting	Labor	30.05	-
	Machine	1.45	-
Care Taking	Labor	110.50	76.02
	Machine	-	5.60
Harvesting and Transportation	Labor	-	25.08
	Machine	-	-
Total	Labor	140.55	101.10
	Machine	1.45	5.60

Table2

Material used in Production

Inputs	Quantity	Unit Cost	Total	
			TL	(%)
Seedling (number)	60	5	300.00	19.12
Fertilizer (kg)				
Farm Manure	1500	0.20	30.00	1.91
Chemical Fertilizer				
Ammonium Sulfate	3.01	1.40	4.21	0.27
DAP	1.55	2.70	4.19	0.26
Potassium Sulfate	1.50	3.00	4.50	0.29
Pole (number)	55	15.00	825.00	52.57
String (kg)	45	0.70	31.50	2.01
Cement (sack)	5	6.00	30.00	1.91
Pebble (m^3)	2	30.00	60.00	3.82
Irrigation			280.00	17.84
Total			1569.40	100.00

Kiwi Cost

Production Procedures: The time for production has been determined for different actions during the establishment period (ploughing, repeat ploughing, leveling, determining of planting spots, pit opening, planting and fertilizing) and during the maintenance period (fertilizing, pruning, cutting seedlings, tying branches to strings, hoeing, irrigation, renewing the wilted seedlings, pole planting, setting up carrying strings etc.). Maintenance cost (for pruning, cutting tips, row cleaning, branch cleaning) was calculated to be 690.50 TL and harvesting and transportation cost (for harvesting, classification, loading and transportation) was 160.24 TL (*Table 3*).

Table 3

Production cost of Kiwi crop

Actions	Total(TL)
Establishment cost /per year	150.60
1. maintenance	690.50
2. harvest and transport	160.24
Total	1001.34
3. Capital Interest (0.14)	140.19
Total Variable Cost (∑VC)	**1141.53**
4. Rent	86.50
5. General Operational Cost (0.03)	34.25
Total Fixed Cost (∑FC)	**120.25**
General Total **(Production Cost) (∑VC + FC)**	*1261.78*
Yield (kg/da)	1651.00
Production Cost (TL/da)	1261.78
Cost of 1 kg. Kiwi (TL/kg)	*0.76*
Selling Price (TL/kg)	1.50
Gross Value of Crop (Yield x Price)	2476.50
Net Profit (TL/da)	**1214.72**
Gross Profit (TL/da)	**1334.97**

Revolving fund interest has been calculated to be 140.19 TL taking into consideration the interest rate of the Agricultural Bank (14%) for crop production. General Operational Cost is related to the management of the farm, social services and the common cost involving all activities (*Kral et al.*, 1999). 3% of the total cost has been taken as the general operational cost for kiwi (*Çiçek et al.,* 1999; *Kızıloğlu* 2010). This figure was calculated to be 34.25 TL. Variable cost was 1141.53 TL and Fixed Cost was 120.25 TL/da. The cost for 1 kg kiwi is 0.76 TL. This was calculated by dividing the total cost by the yield in a decare of land.

The capital productivity has been calculated to be 1.65. The labor productivity was 13.49.

According to the result of the analysis those who take alternative crop support are positively affected by age level of support and low level of income from

hazelnut. This indicates that those who take support in relation to those who do not take support are affected positively by age by 19.2 times at p=0.001 level by attractive support 7.20 times at p=0.001 level and by low level of income from hazel nut 46.37 times at p=0.084 level. On the other hand those who take support are affected negatively by income 0.25 times at p=0.049 level and by proper climate 0.085 times at p= 0.006 level (*Table 4*).

Table 4

Binary LOGIT analysis results of the factors affecting the willingness to take support

	B	Sig.	Exp(B)
Age (0-55=1, 56-+=2)	**2.966**	**.001***	**19.421**
Income of the head of Family (1: Illiterate 2: literate. 3: elementary. 4: secondary. 5: high school. 6: university)	-.489	.167	.613
Income: (1:250 2:251-500 3: 501-1000 4: 1001-5000 5: 5001-10000 6:10001+)	**-1.395**	**.049****	**.248**
Whether there is a Market Demand or not (Yes=1. No=0)	-.809	.328	.445
Whether the supports are attractive or not (Yes=1. No=0)	**1.975**	**.001***	**7.204**
Whether the market price is proper or not (Yes=1. No=0)	25.405	.999	1.079E11
Whether the income from hazelnut is satisfactory or not (Yes=1. No=0)	**3.837**	**.084****	**46.372**
Whether the climate is good or not (Yes=1. No=0)	**-2.463**	**.006****	**.085**

*Model Summary: -2 Log likelihood=65.892a; Hosmer and Lemeshow Test: Chi-square=13.010. Sig.= .072; *. 0.05; **. 0.10; When P<0.10 in the model the confidence level is 90%.*

CONCLUSION

The highest demand for labor in the production of kiwi as an alternative crop is in the period of maintenance period in Rize where kiwi is produced the most.

Pole seedling and irrigation costs are at the top of the list of cost in that order. It has been calculated that the production cost for kiwi is 1261.78 TL/decare and the cost per kilo is 0.76. Net profit per decare is 1214.72 TL and gross profit is 1334.97 TL.

On the web page of the Ministry of Agriculture it is indicated that kiwi production is two and a half times as profitable as hazelnut.

According to the results, those who receive support are affected positively by age attractive supports and low level of income from hazelnut and negatively by income and proper climate.

REFERENCES

Aytaç, M., (1985): Sampling Theory. (Lecture Notes). Bursa : Uludağ University Administrative and Faculty of Economics and Administrative Sciences, 20-100. p.

Çiçek, A., Erkan, O. (1996): Agricultural Economics Research and Sampling Methods. Tokat : GOPÜ, Faculty of Agriculture Publications, No 12.

Çiçek, A., Akçay, Y., Sayılı, M. (1999): Some Important Vegetable Plain of Tokat Province Erbaa Physical Production Inputs. A Study on the Costs and profitability. Tokat : Gaziosmanpaşa University, Faculty of Agriculture Publications No. 34.

Greene, W.H. (1997): Econometric Analysis. 3rd edition Prentice Hall : U.S.A.

Gujarati, N.D. (1992): Essential of Econometrics. Mc Graw Hill : New York.

Kıral, T., Kasnakoğlu, H., Tatlıdil, F.F., Fidan, H., Gündoğmuş, E. (1999): Costing Calculate Methodology for Agricultural Products and Database Guide. Agricultural Economics Research Institute Publications, Project No 13.

Kızıloğlu, R. (2010): Economic Production of White Cabbage in Aziziye. Yakutiye and Pasinler Districts of Erzurum (M.S. Thesis). Erzurum : Ataturk University Graduate School of Natural And Applied Sciences, 8-15. p.