AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

111 EAAE-IAAE Seminar 'Small Farms: decline or persistence'

University of Kent, Canterbury, UK

26th-27th June 2009

Entrepreneurial Attitudes and Behaviours in Small-Scale Dairy Farms in Turkey

Goksel Armagan
garmagan@adu.edu.tr

Altug Ozden
aozden@adu.edu.tr

Adnan Menderes University, Agricultural Faculty, Dept. of Agricultural Economics, TR09100, Aydin, Turkey

Copyright 2009 by Goksel Armagan and Altug Ozden**.** All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.

Abstract

Dairy farms are quite important to transform Turkish livestock sector into being more productive and competitive in the process of EU integration. The purpose of this study is to determine the socio economic features of dairy farms in Turkey and to determine producers' individual and management goals in the future. In addition, farmers' level of participation related to the attitudes, behaviors and subjective norm components are determined and an entrepreneurship index is constructed to determine the factors that influence social economic characteristics of entrepreneurship. The material of the study consists of 167 surveys obtained from Cattle Breeders Association of Turkey in 17 cities through the postal mail in 2007. A five "Likert Scale" was used to determine behaviors and attitudes of farmers as well as descriptive statistics. In each category, factor weights were calculated based on factor analyses. Then, the social economic factors that determine entrepreneurship index were estimated using "Logistic Regression". The results indicate that the primary goals of farmers are high income, enjoying the job, better life conditions, earning respect, utilizing the resources, better image, and producing high quality products. When entrepreneurial behaviors and attitudes are examined it was found that most of the farmers aim at earning high profit as a main goal and value dairy milk farming. The logistic regression shows that the factors that determine entrepreneur index are age, experience and area of feed crops.

Keywords: Small-Scale Dairy Farms, Entrepreneur Index, Theory of Planned Behavior, Turkey.

JEL Classifications: Q12, Q16

1 INTRODUCTION

Agricultural techniques in Turkey has developed well enough and become much more modern in comparison to the past; however, technological development is not sufficient. As a matter of fact agricultural techniques which are used in many countries regarded as '*developed*' are still in use in some agricultural enterprises in Turkey. The real problem is that the reasons why these techniques do not become widespread. One of the basic indicators of Turkish agriculture sector is that agricultural enterprises are small scale businesses and do not make production for market demands.

Changing market conditions and consumer preferences require a change in production structure. A livestock revolution like 'the Green Revolution', which happened in agricultural production, is expected to occur in livestock production. The increase in demand for the animal food products can only pave the way for a livestock revolution. Range of products and per capita consumption will increase with urbanization. In developing countries, per capita consumption is 21 kg for meat and 40 kg for milk. However, in developed countries, milk consumption is five times and meat consumption is three times over the level of consumption (Delgado *et al.*, 1999). According to the Armagan and Akbay (2008), annual per capita consumption of animal products were 48.18 kg for milk, 26.89 kg for yogurt, 18.55 kg for cheese, 6.45 kg for meat, 22.11 kg for poultry and 10.05 kg for fish in Turkey.

Another important subject in dairy livestock farming is food safety. As is known some rules should be followed for food safety in every one step of production process and at the time of delivery and throughout the retail chain. These rules necessitate a system for control and registration. Therefore, food safety systems should be active in the industry for safe milk and milk products. Besides, food safety with all its dimensions (registration, control and know-how on necessary rules for food safety) should be provided in dairy livestock farming that has organic relationship with the industry in terms of raw material. Nevertheless, one of the most important food safety problems that milk and milk products industry in Turkey confronts is that there is not sufficient and proper milk for processing that is milked and kept under adequate conditions. Consequently, it is also important that producers comply with the food safety systems in dairy livestock enterprises providing raw material for milk and milk products industry (Armagan *et al.*, 2009).

Among agricultural subsidization policies planned to be implemented in coming years subsidization for dairy livestock is estimated to increase. When examining "National Agricultural Strategy" and "Agricultural Law" (SPO, 2004; TOJ, 2006a), it is obvious that there are some articles and strategic aims in them for optimizing livestock production in Turkey. Article 21 of Agricultural Law states that 'funds allocated from the budget for agricultural subsidization shall not be less than 1% of Gross National Product (GNP)', yet in 2005 this rate was only 0.77%. In total agricultural subsidization the share allocated for livestock in 2005 was around 10% (Tanrıvermis and Bulbul, 2007). Subsidization for milk production and feed plants constitutes the highest share among the allocations for livestock sector (Yavuz, 2006). Agricultural strategy set for the necessary optimization in agricultural structure has been defined as a "formation of sustainable, competitive, social and organized agriculture sector that uses its sources effectively and combines environmental and international developments". In the scope of agricultural strategy "to improve producers' organizations that do not aim to generate

any revenue" and "to implement measures accelerating technological development" were adopted as strategic aims. In Agricultural Law that describing livestock subsidization as a means of agricultural policy, the "improvement of producers' organization" is one of the foremost areas. In addition, it states in the law that "necessary arrangements shall be made for civil societies, private sector institutions and independent advisors to take action in publication activities and farmer education so that legal arrangements for "private agricultural consultancy" system have been made (TOJ, 2006b). Sustaining agricultural publication activities and providing effective organization in agriculture are still acceptable today for the solution of structural problems of agriculture sector in Turkey.

Dairy farms are quite important to transform Turkish livestock sector into being more productive and competitive in the process of EU integration. Competitiveness and productivity is closely related to the entrepreneurship talent. Entrepreneurship carries some features such as risk taking and earning new wealth as well as earning profit.

Entrepreneurial activity is a planned behavior and reflects, to some degree, cognitive processing. In the literature there are several theories that try to explain behavior. All have some common elements, attitudes and intentions that result in a specific behavior. Among the most commonly used is the Theory of Planned Behavior (TPB) developed by Fishbein and Ajzen (1975) and further extended by Ajzen and Madden (1986). The components of TPB are behavioral intentions, attitudes, subjective norms, and perceived behavioral control. Bergevoet *et al.* (2004) indicated that farmers' goals and attitudes are main factors that determine the strategies and entrepreneur behaviors of dairy farms.

The purpose of this study is to determine the socio economic features of dairy farms in Turkey and to determine producers' individual and management goals in the future. In addition, farmers' level of participation related to the attitudes, behaviors, and subjective norm components will be determined and an entrepreneurship index will be constructed to determine the factors that influence social economic characteristics of entrepreneurship.

2 DAIRY SECTOR IN TURKEY

Milk is raw material for many products; it can be consumed as itself, though. Moreover, it is indisputably crucial in terms of food elements it contains, so dairy livestock farming has a really weighty place in livestock sector, yet a question comes forth regarding business administration: Should we prefer small family enterprises or big enterprises completed their modernization? When this question is tackled in the context of 'efficiency' term, a little bit more different results are obtained in dairy livestock enterprises than in other agricultural enterprises. The examination on agricultural enterprises shows that small family enterprises work much more efficiently than big enterprises; however, this situation is quite contrary in dairy livestock enterprises. As the scale of enterprises gets larger the efficiency decreases a little bit at first sight, but then when the scale gets gradually larger it starts to increase (Hansson; 2008). When dairy enterprises are of question, this special situation pinpointing differences in production could be understood in a much better way.

Milk is produced from four different species: Cows, sheep, goats and water buffalos. In 2007 cow milk constituted 83.5% of world's milk production. In Turkey 91% of total milk production is produced from cows and the rest is produced from sheep 6.54%, goats 2.17% and water buffalos 0.29% (FAO, 2007). The share of cow milk in total milk production is gradually increasing while the shares of other species are decreasing in Turkey.

In Turkey enterprises breeding livestock are usually small-scale family enterprises and the rate of specialized livestock enterprises is extremely low; however, according to the latest agricultural census there are four million agricultural enterprises in Turkey and only 3.6% of them are occupied with livestock breeding. When livestock enterprise groups are taken into consideration as to the data of the year 2001 the rate of enterprises with 1 to 4 cows is 60%, 5 to 9 cows is 26%, 10 to 19 cows is 11%, 20 to 49 cows is 3% and with more than 50 cows is 0.3% (Dairy Report, 2004).

The USA is the first one among the first twenty countries in milk production and Turkey is the fourteenth (14th) on the same list, yet the European countries occupy the first places when 'efficiency' is the issue. Turkey is around the middle in terms of efficiency, but when milk prices are examined Turkey peaks at the third line with its third highest milk price. Nevertheless, high input prices affect this statistics negatively and do not leave a room especially for small enterprises to breathe (Table 1).

Table 1.

Milk production, cattle syocks and raw milk price in the world (2007)

	Milk Production (000 ton)	Cattle Stocks (000 head)	Raw Milk Price (US $/ton)
United States of America	84189	97003	286.00
India	42140	177840	253.71
China	32820	116861	372.15
Russian Federation	31950	21466	265.45
Germany	27900	12601	339.90
Brazil	25327	207170	221.81
France	23705	19359	348.32
New Zealand	15842	9650	221.48
United Kingdom	14450	9988	329.83
Ukraine	12300	6175	211.88
Poland	11800	5696	299.66
Italy	11000	6000	389.88
Pakistan	11000	29600	307.54
Turkey	**11000**	**10871**	**474.61**
Netherlands	10750	3730	432.32
Argentina	10500	50750	275.68
Australia	10350	28400	250.04
Mexico	9599	29000	347.88
Japan	8140	4398	688.06
Canada	8000	14155	573.16

Source: FAO, 2007

It is obvious that small scale enterprises form a structural problem in the sector when horizontal integration issue in dairy livestock enterprises, which are the first steps of milk and milk products sector in Turkey, is laid on the table. This situation implies that enterprises do not direct themselves toward large-scale widening through new investments and merging, which puts difficulty on increasing milk productivity per animal.

The integration level between milk industry enterprises and livestock enterprises they get raw milk from is quite low. Contracted breeding system has been put into action in some farms where animal number is pretty high in recent years by big companies. Lots of small-sized processing facilities prefer to collect milk directly from producers or milk collectors without making any contracts. Cooperative kind producers' organizations gathering milk producers together in Turkey are insufficient so that milk producers are dependent upon milk collectors in the region, and some important problems emerge while collecting, cooling and transferring of raw milk. The fact that organization is insufficient and livestock enterprises are small-scaled hinders a payment system which considers fat and protein ratio and microbiological quality of raw milk, and therefore an optimization in raw milk quality. In Turkey only the leading companies of the industry are able to apply the bonus system for payments just for the farms they have contracts. In Turkish milk processing industry producers' cooperatives that produce feed and process its raw milk and then market it through vertical integration are very insufficient in number and some existing ones are not working effectively (Demirbas *et al*., 2007). Only 6% of 1300 enterprises in milk and milk products industry producing 1000 tons and/or more a year is a member of a cooperative (SPO, 2004). Low organization is a serious bottleneck for the integration between livestock and dairy industry.

3 MATERIAL AND METHODS

The material of the study consists of 167 surveys obtained from Cattle Breeders Association of Turkey in 17 cities through the postal mail in 2007. A five likert scale was used to determine behaviors and attitudes of farmers as well as descriptive statistics. The opinions on entrepreneurship based on "strongly disagree (1)" and "strongly agree (5)" were classified into five categories as individual goals, management related goals, entrepreneurial behavior, entrepreneurial attitude, and subjective norms. Factor analysis is used for demonstrating entrepreneurial behaviours and attitudes of the producers. The scientists investigate the origin of interdependence between data and factor analysis, which is one of the multivariable analysis techniques. Factor analysis briefly described as a technique for reducing data helps presenting provides presenting data effectively in brief form. Factor analysis represents a group of processes used for reducing and/or outlining data (Hair *et al*., 1998). In a study there can be so many variables and most of them have interrelationship with one another. Variables might have to be reduced so as to make them functional. The interrelationship between different groups of variables can be studied considering a few important factors (components). In factor analysis main components in other word *eigenvalues* are identified. In this study factor loadings (rotation sums of squared loadings) of the components whose *eigenvalues* are bigger than 1 were identified setting variance percentages, and "entrepreneurship index" was calculated based on these percentages.

Then, the social economic factors that determine entrepreneurship index were estimated using “Logistic Regression”.

The calculated entrepreneurship index was excepted as a dependent variable in logistic regression model. Dependent variable is generally integrated to the analysis in binary form in the logistic regression model which is widely used. In an alternative use of the logistic regression model, the dependent variable is continuous, but this alternative offers limited range (Manning, 1996).

The logistic regression model offers various virtues. Firstly it is easily transformed into a simple linear regression and secondly it yields predicted values within the natural boundaries of dependent variable. According to classical assumptions, ordinary least squares estimation of the logit model is also free of the heteroscedasticity problem caused by the use of using the logistic regression with bounded continuous data (Maddala, 1983).

S, which is between zero and unity and which is a function of a vector of dependent variables and some error term, ε, symmetrically distributed around zero bounded continuous variables. When we apply the functional form of the logistic distribution on these variables, we obtain the following finding:

$$S_i = \frac{1}{1+e^{-X_i\beta+\varepsilon_i}} \quad (1)$$

Then we see that standard transformation then produces the simple linear regression equation:

$$\log\left(\frac{S_i}{1-Si}\right) = X_i\beta + \varepsilon_i \quad (2)$$

4 RESULTS AND DISCUSSION

The descriptive statistics acquired from survey results can be followed on Table 2 and Table 3. According to the results, average irrigated land was found as 11.24 hectare, non irrigated land as 9.38 hectare, animal number as 42.12 LAU, milk yield as 311 kg, milk yield per cow as 21.23 kg, and the amount of milk sold as 87%. In addition it was found that average age of farmers is 45, year of experience is 18, and education level is mostly primary and high school level.

The whole result on entrepreneurial behaviours and attitudes of producers is on Table 4. When entrepreneurial behaviours and attitudes are examined it was found that most of the farmers aim at earning high profit as a main goal and value dairy milk farming. The primary goals of farmers are high income, enjoying the job, better life conditions, earning respect, utilizing the resources, better image, producing high quality products. In addition 85% of farmers are eager to enlarge their farms. It is found that farmers value high income because more than half of them don’t agree with the idea that income is not a priority.

Applying factor analysis (SPSS 13.0) to the data reduced the number of variables, related to the goals and desired farm type of the dairy farmer from 41 to 7. The identified factors had eigenvalues greater than 1, and the total variance explained

by these factors was 73% (which–in social sciences–is generally regarded as satisfactory (Hair *et al.*,1998)). Table 4 shows the factor loadings (after varimax orthogonal rotation) of the goals on the seven factors identified. Analysis of the seven factors showed the following.

Table 2.
Some socio-economic chracteristics of dairy farmers (mean and %)

		General (n=167)
Age of dairy farmers (year)		44.66 (9.00)
Experience of dairy farmers (year)		17.68 (10.17)
Education level of dairy farmers (%)		
	Primary School (1)	41.9
	Middle School (2)	13.8
	High School (3)	33.5
	University (4)	10.8
Subscriber for magazine or newspaper (%)		
	Yes (1)	48.5
	No (0)	51.5
Frequency of listening radio (%)		
	Always	37.7
	Often	37.7
	Rarely	12.0
	Never	12.6
Frequency of watching TV (%)		
	Always	54.5
	Often	37.1
	Rarely	6.0
	Never	2.4
Frequency of internet use (%)		
	Always	9.6
	Often	18.0
	Rarely	14.4
	Never	58.1

(Standard deviations are in the parenthesis)

Component 1 (Goals): the variables, which have a relatively high loading on this factor are ‘‘I would like to expand my farm’’, “I would like to have a farm with high efficiency’’, ‘‘I would like to have a farm producing environment-friendly products’’, ‘‘I would like to have a farm which follows and implements innovations closely’’, ‘‘I would like to have a farm with modern standards’’, “I would like to have a stud farm”, “I take important decisions by consulting a lot of people”, “I always would like to produce better than the other producers”, “I would like to keep in touch with the others all the time”, “I try to manage my farm with the lowest rate of loans”, “I would like to have the maximum production”, “I enjoy trying new things on my farm” and “It is very important to keep my farm update”.

Component 2 (Individual Targets): all the variables which are related to intrinsic human values have a high loading on this factor: ‘‘I would like to have a huge amount of income as much as possible’’, ‘‘I would like to do a thing which I like and enjoy doing’’ , ‘‘I would like to create a better life standard for the future’’, ‘‘I would like to

gain the respect of my colleagues as I succeed in this job'', "I have enough free time and I want to spend my time with this job", "I would like to use my resources effectively", "I would like to have a positive image in the business life" and "I would like to produce qualified and reliable products".

Table 3.

Some technical characteristics of dairy farms (mean)

	General (n=167)
Irrigated area (hectare)	11.24 (1.12)
Non-Irrigated area (hectare)	9.38 (1.19)
Number of plots	13.24 (2.14)
Area of feed crops (hectare)	8.58 (0.93)
Number of tractors	1.18 (0.06)
Number of Silage Machines	0.46 (0.04)
Number of milking machines	1.44 (0.19)
Capacity of bulk tank (kg)	205.57 (53.85)
Number of dairy cow	22.88 (1.98)
Herd Size (Large Animal Unit - LAU) *	42.12 (3.56)
Milk production (kg)	322.56 (29.85)
Self consumption of Milk (kg)	11.48 (1.73)
Yield (kg per day per cow)	21.23 (5.22)

(Standard deviations are in the parenthesis)

* In calculating LAUs, the following coefficients were used: calf (0-6 months of age) = 0.20; young cow (7-12 months of age) = 0.40; heifer (12-24 months of age - female) = 0.70; cow (24+ months of age - female) = 1.0; bull (12+ months of age - male) = 1.20.

Component 3 (Entrepreneurial Behaviours): variables that have high loading on this factor are ''I would like to have the sense of confidence in the business life'', ''I acquaint myself with everything before I make an important decision'', ''I follow legal arrangements'', ''I always work with the same bank'', "I always control my production targets and I make an analysis of my farm according to these results", "I can control every step of the production process", "The opinions of the other colleagues about my farm are important for me" and "I follow the agricultural policies of livestock production closely".

Component 4 (Entrepreneurial Attitudes): variables with high loading are ''It is still enjoyable to produce and it satisfies me'', ''I never change my mind when I decide on something'', ''My purposes and targets about animal breeding are certain'', "I am

insured against all possible risks to avoid from them as much as possible" and "I always advise the younger to be in the livestock production".

Component 5 (Cost Reduction and Internet Use): the two variables underlying the factor family farm are ''I can reduce the cost of the milk much more'' and ''I use internet to acquire update and correct information''.

Component 6 (Subjective Norms): besides the variable ''I don't avoid spoiling the legislation in my work'' also the variable ''I believe that the legal arrangements will prevent my future plans''.

Component 7 (Market Information): has significant loading of two variables are ''I always haggle with customers and sellers for my dealings" and "I spend a lot of time in management affairs and bureaucracy".

The revealing variance percentages obtained from the results of factor analysis were used for calculation of "Entrepreneurship Index". Variance percentages of each component were weighted with the answers that producers gave to the statements considering likert scale. This index formed the 'entrepreneurship grade' of each producer. For example since factor loadings of the first 8 statements are grouped under the component "Individual Targets". These statements were weighted with 14.72% variance coefficient and added to "Entrepreneurship Index". This calculation method was used for 41 different statements. As cumulative variance percentage of all the components is 73%, the maximum limit for "Entrepreneurship Index" could be 73%. Thus average entrepreneurship index for 167 producers is 55.26 (Standard Deviation: 11.75) out of 73, or 76 out of 100.

Table 5 displays the results from logistic regression model to which Gretl (1.8.0) programme was applied regarding entrepreneurship index as a dependent variable. The logistic regression shows that the factors that determine entrepreneur index are age ($p<0.01$), experience ($p<0.01$) and area of feed crops ($p<0.001$). On the other hand, reading magazine, newspaper, listening radio or watching TV, internet use, land size, and flock size are found to be insignificant.

Table 4.

Factor Analysis Results

Statements	Average[a]	SD[a]	Factors[b]						
			Goals	Individual Targets	Entrepreneurial Behaviours	Entrepreneurial Attitudes	Cost Reduction and Internet Use	Subjective Norms	Market Information
I would like to have a huge amount of income as much as possible	3.922	1.460	0.342	**0.547**	0.332	-0.088	0.045	0.143	0.133
I would like to do a thing which I like and enjoy doing	3.946	1.295	0.363	**0.791**	0.240	0.231	-0.038	0.042	0.024
I would like to create a better life standard for the future	4.066	1.299	0.371	**0.728**	0.327	0.118	-0.093	0.133	0.128
I would like to gain the respect of my colleagues as I succeed in this job	3.928	1.301	0.309	**0.776**	0.139	0.315	0.048	0.122	0.046
I have enough free time and I want to spend my time with this job	3.575	1.445	0.200	**0.764**	0.030	0.330	0.122	0.189	-0.095
I would like to use my resources effectively	3.994	1.273	0.412	**0.727**	0.204	0.135	0.078	0.131	0.091
I would like to have a positive image in the business life	3.952	1.312	0.395	**0.783**	0.169	0.233	-0.014	0.071	-0.029
I would like to produce qualified and reliable products	4.090	1.226	0.578	**0.620**	0.310	0.079	0.078	-0.079	0.064
I would like to expand my farm	4.186	1.160	**0.820**	0.351	0.134	0.185	0.097	0.143	0.093
I would like to have a farm with high efficiency	4.275	1.112	**0.807**	0.405	0.160	0.145	0.085	0.149	0.097
I would like to have a farm producing environment-friendly products	4.198	1.152	**0.797**	0.402	0.196	0.126	0.126	0.084	0.052
I would like to have a farm which follows and implements innovations closely	4.210	1.191	**0.840**	0.418	0.125	0.087	-0.012	0.001	-0.013
I would like to have a farm with modern standards	4.263	1.115	**0.861**	0.342	0.252	0.105	0.031	0.050	0.030
I would like to have a stud farm	4.126	1.208	**0.825**	0.324	0.184	0.105	0.105	0.043	0.075
I take important decisions by consulting a lot of people	3.695	1.325	**0.374**	0.178	0.373	0.233	0.223	-0.021	-0.471

(continued on next page)

Table 4. (continued)

Statements	Average[a]	SD[a]	Factors[b]						
			Goals	Individual Targets	Entrepreneurial Behaviours	Entrepreneurial Attitudes	Cost Reduction and Internet Use	Subjective Norms	Market Information
I always would like to produce better than the other producers	3.964	1.119	**0.572**	0.091	0.334	0.404	0.097	-0.094	-0.281
I would like to keep in touch with the others all the time	4.060	1.028	**0.738**	0.104	0.325	0.330	-0.093	-0.074	0.138
I try to manage my farm with the lowest rate of loans	4.090	1.069	**0.574**	0.334	0.532	0.180	-0.117	0.014	0.076
I would like to have the maximum production	4.126	1.042	**0.634**	0.183	0.286	0.465	0.061	0.077	0.043
It is still enjoyable to produce and it satisfies me	3.784	1.152	0.115	0.307	0.206	**0.557**	0.319	-0.026	-0.032
I never change my mind when I decide on something	3.485	1.270	0.158	0.194	0.154	**0.737**	0.010	0.103	0.062
I always haggle with customers and sellers for my dealings	4.108	1.109	0.411	0.205	0.360	0.308	-0.003	0.172	**0.441**
I enjoy trying new things on my farm	4.048	1.063	**0.438**	0.304	0.386	0.378	0.047	0.245	0.263
My purposes and targets about animal breeding are certain	3.922	1.087	0.332	0.280	0.299	**0.587**	-0.006	0.079	0.293
I am insured against all possible risks to avoid from them as much as possible	3.281	1.212	0.201	0.157	0.145	**0.477**	0.383	0.335	-0.024
I would like to have the sense of confidence in the business life	4.006	1.111	0.407	0.160	**0.513**	0.335	0.136	-0.019	0.059
It is very important to keep my farm update	4.030	1.032	**0.500**	0.270	0.414	0.414	0.210	0.043	0.248
I always advise the youngers to be in the livestock production	3.743	1.227	0.278	0.180	0.198	**0.477**	0.404	0.013	0.281
I spend a lot of time in management affairs and bureaucracy	3.401	1.271	0.182	0.065	0.144	0.170	0.053	0.019	**0.730**
I can reduce the cost of the milk much more	3.042	1.272	-0.083	0.016	0.034	0.087	**0.754**	-0.153	0.146
I acquaint myself with everything before I make an important decision	4.018	0.991	0.463	0.227	**0.577**	0.322	0.106	0.033	0.166

(continued on next page)

Table 4. (continued)

Statements	Average[a]	SD[a]	Factors[b]						
			Goals	Individual Targets	Entrepreneurial Behaviours	Entrepreneurial Attitudes	Cost Reduction and Internet Use	Subjective Norms	Market Information
I use internet to acquire update and correct information	3.120	1.321	0.232	-0.076	0.291	0.190	**0.605**	0.129	-0.163
I follow legal arrangements	3.826	1.146	0.349	0.133	**0.735**	0.168	0.228	0.110	-0.177
I always work with the same bank	3.521	1.197	0.117	0.154	**0.585**	0.019	-0.025	0.033	0.145
I always control my production targets and I make an analysis of my farm according to these results	3.820	1.031	0.174	0.158	**0.687**	0.109	0.318	-0.020	0.051
I can control every step of the production process	3.904	1.031	0.207	0.277	**0.522**	0.511	0.157	0.087	0.098
I may increase the sale prices of milk much more	2.958	1.277	0.007	0.017	0.086	0.012	**0.779**	0.282	-0.072
The opinions of the other colleagues about my farm are important for me	3.826	1.130	0.172	0.137	**0.548**	0.341	0.147	0.335	-0.068
I follow the agricultural policies of livestock production closely	3.892	1.076	0.176	0.227	**0.717**	0.278	0.033	0.236	0.041
I don't avoid spoiling the legistation in my work	2.671	1.310	0.030	0.120	-0.008	0.051	0.210	**0.823**	0.092
I believe that the legal arrangements will prevent my future plans	3.102	1.274	0.032	0.187	0.246	0.100	-0.069	**0.777**	-0.014
Results of Factor Analysis									
Initial Eigenvalues			19.183	3.091	2.088	1.703	1.453	1.307	1.064
Rotation Sums of Squared Loadings			8.634	6.034	5.257	3.897	2.453	2.007	1.606
% of Variance Explained			21.059	14.717	12.823	9.504	5.984	4.894	3.917
Cumulative % of the Variance Explained			21.059	35.776	48.599	58.103	64.087	68.981	72.899

[a] Average and standard deviation results of a Likert Scale

[b] Factors: extracted from factor analysis. Maximum factors with loadings > 0.35 or < -0.35 are bold

Table 5.
Logistic Estimates (n:167, Dependent variable:Entrepreneur Index)

	Coefficient	*t-ratio*
Constant	2.269	4.433***
Education level of dairy farmers (1,2,3,4) [a]	-0.141	-2.159**
Age of dairy farmers (year)	-0.000	-0.068
Experience of dairy farmers (year)	-0.016	-2.125**
Subscriber for magazine or newspaper (1: yes, 0: no)	0.005	0.034
Frequency of listening radio [b]	0.020	0.255
Frequency of watching tv [b]	-0.097	-0.897
Frequency of internet use [b]	-0.112	-1.654
Area of feed crops (hectare)	0.002	3.024***
Herd size (LAU -Large Animal Unit)	-0.002	-1.453
R-squared	0.116	
F(9, 157)	2.283*	
Log-likelihood	-205.698	
Mean dependent variable	55.256	
Sum squared residuel	20901.220	
S.D. dependent variable	11.746	

*:p<0.05, **: p<0.01, ***: p<0.001
[a] 1: Primary School, 2:Middle School, 3: High School, 4: University
[b] Frequencies 1: Always, 2: Often, 3: Rarely, 4: Never

5 CONCLUSION

The main aim of "*rural development*" which has been widely mentioned in recent years is to create an environment where human beings live in peace and happiness. As 30% of total population lives in rural areas in Turkey it is not possible to separate rural problems from agriculture. Sustainable and long-term policies should be made for the solution of structural problems in dairy livestock, which is one of the important sub-activities of agricultural activity. When entrepreneurial behaviours and attitudes of producers from dairy livestock are laid on the table it is clear that producers are ready to do whatever they are supposed to undertake. Therefore, producers should benefit from entrepreneurial potentials of experienced producers who have sufficient cultivation area for feed plants and are highly educated. Only when are dairy policies that would help support producers with entrepreneurial skills who adopt dairy livestock farming put into action it will be possible for competitive and efficient enterprises in milk sector to sustain their activities.

REFERENCES

Ajzen, I. and Madden, J.T. (1986). Prediction of goal-related behaviour: attitudes, intentions, and perceived behavioural control. Journal of Experimental Psychology 22, 453–474.

Armagan, G. and Akbay, C. (2008). An econometric analysis of urban households' animal products consumption in Turkey, Applied Economics, 40, 2025–2032.

Armagan, G., Koc, A., Ozden, A. (2009). Food safety at the dairy farm level: knowledge, practices and attitudes of farmers, Milchwissenschaft (Milk Science International), 64 (1): 6-9.

Bergevoet, R. H. M., Onderstejin, C. J. M., Saatkamp, H. W., Van Woerkum, C. M. J. and Huirne, R. B. M. (2004). Entrepreneurial Behaviour of Dutch Dairy Farmers Under a Milk Quota System: Goals. Objectives and Attitudes, Agricultural Systems 80:1-21.

Dairy Report (2004). For a Better Understanding of Milk Production World-Wide, IFCN (International Farm Comparison Network), Germany.

Delgado, C. L., Rosegrant, M. W., Steinfeld, H., Ehui, S. and Courbois, C. (1999). The coming livestock revolution, Choices (Fourth Quarter): 40–44.

Demirbas, N., Cukur, F., Tosun, D. and Golge, E. (2007) The knowledge and practices in milk collection centres in Turkey, Agro Food Industry Hi-Tech, 18 (6): 29-31.

FAO, (2007). Statistical Database, [Available at: http://faostat.fao.org, April-2009]

Fishbein, M. and Ajzen, I. (1975). Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research, Addison-Wesley, Reading MA.

Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W.C. (1998). Multivariate data analysis, Prentice Hall, Upper Saddle River, NJ.

Hansson, H. (2008). Are larger farms more efficient? A farm level study of the relationships between efficiency and size on specialized dairy farms in Sweden, Agricultural and Food Science, 17 (4): 325-337

Maddala, G. S. (1983). Limited Dependent and Qualitive Variables in Econometrics, Cambridge University Press, Cambridge.

Maning, R. (1996). Logit regression with continuous dependent variables measured with error, Applied Economics Letters, 3 (3): 183-184.

SPO, (2004). Agricultural Strategies Report 2006-2010 (in Turkish), Turkish Prime Ministry State Planning Organization, [Available at: http://mevzuat.dpt.gov.tr/ ypk/2004/92.pdf, April-2009]

Tanrıvermis, H. and Bulbul, M. (2007). The role of agriculture in Turkish economy at the beginning of the European Union accession negotiations, Journal of Applied Sciences, 7 (4):612-625.

TOJ, (2006a). Agricultural Law, Turkish Official Journal, Publication date: 25.04.2006, number: 5488, Ankara.

TOJ, (2006b). Regulation of Private Extension Services, Turkish Official Journal, Publication date: 08.09.2006, Number: 26283, Ankara.

Yavuz, F. (2006). “Agricultural Policy”, Agriculture in Turkey (Ed. Fahri Yavuz), Turkish Ministry of Agriculture and Rural Affairs Puplication, pp43-67.