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PRELIMINARY DATA ON EDUCATION LEVEL OF DAIRY FARMERS PERFORMANCES IN KOSOVO

Medin ZEQIRI[1], Ylli BIÇOKU[2] , Ergent PIRE[3]

[1*]Extensionist in Gjilan Municipality, Kosovo and PhD candidate at Agricultural University of Tirana, Koder Kamez, Tirana 1000-Albania.
[2]Agricultural University of Tirana, Koder Kamez, Tirana 1000.
[3]Researcher at Development Solutions Associates (DSA), Leke Dukagjini street, No 11/1, Tirana 1001, Albania

Corresponding author e-mail: ybicoku@ubt.edu.al

Abstract

The comparison of education level and its effect on the performance of the dairy farms in two regions of Kosovo was the objective of this exploratory study, as it is not done up to now from any institution, in the country. The data are collected from 150 respondents randomly selected from farmers' municipality database, in two regions of Kosovo (Gjilan and Ferizaj). The data were collected through face to face interviews and personal visits based on a structured questionnaire, during the period of May-July 2014. The results show significant differences between farmers (higher level of education compare with primary education) in regard with food safety standards, animal diseases, milk yield, animal identification, farm register, and feeding of the animals according to the production level. 64.4% of the farmers of secondary+ education group knew who is the institution in charge with food safety, 72.4% knew about the institution in charge of issuing the animal health certificate, 40.2% new the symptoms of Brucellosis, 43.7% knew the symptoms of TBC compare with 27%, 33.3%, 12.7% and 14.3%, respectively for the primary education group. This research may help agriculture advisory service decision makers improving teaching and training programs for dairy farmers. Better trained farmers can improve animals feeding, cows' milk yield, diseases control of animals, and reduce the public health risk of milk-borne zoonosis. In addition, public and donors support schemes for farmers should be strongly linked to food safety standard implementation.

Key words: *dairy farming, education, dairy farming knowledge, performance, Kosovo.*

INTRODUCTION

Kosovo continues to be predominantly a rural economy with 12 percent of GDP generated by agriculture, and it's the largest employer in Kosovo today, estimated to employ around the agriculture sector nearly 25 percent of the total employment, mainly in the informal sector, while according to the official results from the Population, Households and Housing Census in Kosovo (2011) shows the employment rate in agriculture by 4.4 percent (MAFRD, 2014; IPA, 2013; Qeveria, 2013). The majority of the Kosovo's population (61 percent) lives in rural areas (FAO, 2014).

Agriculture still remains subsistence-oriented due to a very small average size of farms, on average, the farm size is 3.2 ha agriculture land (including common land/pasture) and about 3.9 cattle (about 2 milking cows). Most of the farms are mixed ones and only 1-2 percent of agricultural land is used by commercial farms (more than 10 ha/farm) (MAFRD, 2014). According to Agriculture Census in Kosovo, there are 130.775 agricultural farms, which are breeding 261.689 cattle (51 percent of which milking cows). It is estimated that today there are about 91.200 livestock farms in Kosovo (ASK, 2015).

Due to the favorable natural resources dairy activities have a long tradition in Kosovo. Cow's milk production is concentrated in the private sector since the social sector collapsed during the transition in the 1990s and especially during the war in 1999 (Nushi and Selimi, 2009). In recent years efforts have been made to turn the production of milk from own consumption farms to market-oriented ones.

According to Food and Veterinary Agency of Kosovo (FVA) the number of cattle farms is 70.215 farms and about 26.100 of them are delivering milk to the dairy processors (ASK, 2013).

Farms with more than 5 milking cows which are consider commercial farms, during 2014 were 5.472 (7.8 percent of the dairy farms), These farms are the main suppliers to the dairy processing industry with a total of about 62 million liters of milk per year, or about 18 percent of the milk produced in the country (AAD, 2015; MAFRD, 2015; and author calculations). The rest is used for feeding calves, for own consumption, sold as raw milk or white cheese on the various local unregulated (green) markets. Commercial and semi-commercial farms sell milk to one of the 19 dairy processors (Nushi, 2010). Traditional dairy products are yogurt, butter, curd and different kinds of cheese.

Low productivity characterized the dairy farming as the result of poor farming technologies and lack of capital by smallholder farmers. In addition, research and training programs needs to be planed, which would be beneficial to the farming environment. Due to the increase in purchasing power, demands for local dairy products are expected to mark an increase (MAFRD, 2014).

The average age of the holders of agricultural farms is 52 years. As far as education/training in agriculture, more than 95% of managers have only practical experience in agriculture (ASK, 2015).

Farmers' Education. The question addressed in this paper is: What impact does farmers' education have on farm business practice?

According to several authors (Hicks, 1987; Hanushek and Wößmann, 2010) the education and training are: (i) widely acknowledged as contributors to national economic wellbeing and growth; (ii) explaining differences in productivity and income between countries is the level of education and human capital, which includes both formal education and informal on-the-job training; (iii) can facilitate the diffusion and transmission of knowledge and information for implementing the new technologies.

Lockheed et al., (1980) have synthesized the conclusions of a number of studies of the positive effect of a farmer's educational level and exposure to extension services on the farm productivity.

In our research, is investigated the relation between the educational levels of dairy farmers with practices implemented on the farm, such as: farm size, farmer age, farmers experience in livestock milk production, number of animals raised, farmers' awareness about food safety standards and animal diseases.

MATERIALS AND METHODS

The present study was conducted in the regions of Gjilan and Ferizaj, Kosovo. The data was collected during the period of May-July 2014.

A structured questionnaire was used for collection of all information related to dairy farming. To avoid confounding questions and for clarity, the questionnaire was pre-tested on a pilot group of 10 farmers. In the case of inconsistent questions, it was modified accordingly. Face-to-face interviews were conducted. The questionnaire contained both open-end and closed questions. Observation is the most direct way of collecting data. According to Gillham (2003) a risk of choosing observation is that people observed may play some kind of a role when observed. For this reason both observation and interviews were used and also the animals and their environment were observed carefully. Farms with more than 4 dairy cows were interviewed.

The obtained data was stored in Excel-2000 and imported to software SPSS 22.0 for analysis. Stored data were tabulated and arranged as percent value. Descriptive statistics (i.e. means, frequencies etc) was done to estimate the different variables.

RESULTS AND DISCUSSIONS

This section analysis the current situation and the sector's developments with focus the relationship between level of formal education and farmers practices, in two regions of Kosovo. A six point Likert scale was used for farmers' education: 1-no education, 2- primary education (up to 4 years of school), 3- obligatory education (up to 9 years of school), 4- agricultural middle school (12 years of school), 5- other middle school(12 years of school), and 6-university degree.

The results of group 1-3 (primary education) are compared with those of better educated farmers group 4-6 (secondary + education).

Sample socio-demographic and farm indicators

Table 1. Main sample socio-demographic and farm indicators

Education level	Sample farm household indicators			
	Age		Working experience	
	Mean	Std. Dev.	Mean	Std. Dev.
Primary education	48.98	12.432	23.29	15.731
Secondary+ education	44.02	8.357	17.5	10.823

Education level	Sample farm household indicators			
	Farm size		No. of cows	
	Mean	Std. Dev.	Mean	Std. Dev.
Primary education	6.29	6.433	9.0	4.708
Secondary+ education	9.02	9.699	12.07	7.835

Since the typical sample farm had more than 4 cows and the average farm size was 9.0 to 12.07 cows, it may be concluded that they were market oriented (Table 1). We targeted market oriented farms, as usually they are more aware for standards; invest more in the future toward improving standards; and compare with small subsistence farms (1-2 cows) are more likely to "survive" the growing competition in the future.

Effect of education on milk yield and milk sold to the processors. The difference in milk production performance between primary education group of farmers and secondary+ group (Table 2) is an established fact: hence the effect of education level on milk yield was assessed in both groups of farmers. Milk yield, increased with the level of farmer's education.

Table 2. Effect of education on milk yield

Education level	**Milk/cow/day (kg)**	
	Mean	Std. Dev.
Primary education	9.97	4.490
Secondary+ education	14.06	4.921

Table 3. Answer the question "What part of your milk production is sold to the processors"?

Percentage of the production	Selling milk to the processors			
	Primary education		Secondary+ Education	
	Freq.	Percent	Freq.	Percent
0	46	73.0	40	46.0
1-50	2	3.2	8	9.2
51-100	15	23.8	39	44.8
Total	63	100	87	100

From table 3, we figure out that 73 percent of the primary education farmers are not selling milk to the processors. This group mainly is selling the milk directly to the consumer houses, in the green market (open market), and only 27 percent are selling to the processors. While for the secondary+ group of farmers the figures are 46 and 54 percent, respectively.

Food Safety Institution. According to the Food Law[1] the official control of food shall be carried out from the inspectorate under the Food and Veterinary Agency. The farmers were asked to choose the institution in charge of food safety in Kosovo providing them several options from which to choose. 64.4 percent of the secondary+ education group stated they know that FVA is in charge with food safety compare with 27 percent of the primary education group. 69.8 percent of farmers of the primary education group stated that they do not know–indicating the law awareness level among farmers about food safety (Table 4).

Table 4. Answer to the questions: "Which is the institution in charge of food safety? and Which is the institution that issues animal health certificate?

Education level	Institution in charge of food safety			
	Primary education		Secondary+ education	
	Freq.	Percent	Freq.	Percent
FVA	17	27.0	56	64.4
MAFRD	1	1.6	4	4.6
Municipality	0	0.0	2	2.3
I don't know	44	69.8	23	26.4
No answer	1	1.6	2	2.3
Total	63	100	87	100

Animal Health Certificate. The Law on "Veterinary"[2] (article 6, 14, 16, and 19), emphasis that veterinary service is responsible for issuing veterinary certificate for: (i) the movement of the animal or the products, (ii) trade of animals, (iii) slaughtering of animals. Farmers were asked to choose the institution in charge of issuing animal health certificate providing several options from which to

[1] Republic of Kosovo (RoK): Law on Food No. 03/L-016. Assembly of Kosovo, 12 February 2009. Official Gazette of the Republic of Kosovo No. 49, 25 March 2009

[2] Republic of Kosovo (RoK): **Law on Veterinary No 2004/2**. Assembly of Kosovo, 16 June 2004, Official Gazette of the Provisional Institutions of Self-Government in Kosovo No. 18, 01 November 2007

choose. 72.4 percent of the farmers from the secondary+ education group provided the right answer while almost 62 percent of the farmers from primary education group stated that they do not know (Table 5), indicating the lack of information about this important aspect.

Table 5. Answer to the questions: "Which is the institution that issues animal health certificate?

Education level	Institution that issues animal health certificate			
	Primary education		Secondary+ Education	
	Freq.	Percent	Freq.	Percent
FVA	21	33.3	63	72.4
MAFRD	1	1.6	2	2.3
Municipality	1	1.6	1	1.1
I don't know	39	61.9	20	23.0
No answer	1	1.6	1	1.1
Total	63	100	87	100

Farm Register. According to the article 27 of law on "Veterinary" the farmer must keep the animal register. Keeping a farm register is very important, not only for farmers but also for animal and public health experts**,** because through records could be identified the movement of animals from one farm to another, from one farm to the market or to a processing facility (slaughterhouses and/or meat processors). The record keeping of animals' movement helps to find the sick ones, and also to find the farm and the area where other animal may have come into contact with and potentially exposed to a disease. Using the farm records, the experts can determine if those animals need to be tested, treated, or even quarantined to prevent further spread of disease. These are very important step in securing the safety of our food supply.

Only 14.3 percent of the farmers of primary education group and 35.6 percent of the farmers of the secondary +education group stated that they have farm register book (Table 6).

Table 6. Answer to the questions: "Do you have a farm book/register on livestock"?

Educatio n level	Farm register			
	Primary education		Secondary+education	
	Freq	Percent	Freq	Percent
Yes	9	14.3	31	35.6
No	54	85.7	56	64.4
Total	63	100	87	100

Animal diseases. Most of the farmers of primary education group stated that they don't know the symptoms of Brucellosis and TBC, 87.3 percent and 85.7 percent, respectively (Table 7). While the answer from the secondary + education group is much better: 40.2 percent of them knew the symptoms of Brucellosis and 43.7 percent knew the symptoms of TBC.

Feed ration. Most of the farmers of the both groups are not consulting the feed expert and they continue to feed the animals without making a distinction of the ration according to the milk production. This is one of the reasons why the milk yield in Kosovo is below potential breed averages.

Table 7. **"**Do you know the symptoms of the following diseases?

Education level	Brucellosis			
	Primary education		Secondary+education	
	Freq.	Percent	Freq.	Percent
Yes	8	12.7	35	40.2
No	55	87.3	52	59.8
Total	63	100	87	100
Education level	TBC			
	Primary education		Secondary+Education	
	Freq.	Percent	Freq.	Percent
Yes	9	14.3	38	43.7
No	54	85.7	49	56.3
Total	63	100	87	100

However there is a considerable difference between the two groups, where 1/3 of the secondary+ education farmers are feeding the cows according to the milk production (Table 8).

Table 8. "Do you use the feed ration of cows according to the milk production?

Education level	Feed ration			
	Primary education		Secondary+education	
	Freq.	Percent	Freq.	Percent
Yes	8	12.7	28	32.2
No	55	87.3	59	67.8
Total	63	100	87	100

CONCLUSIONS

The aim of this exploratory study was to assess the impact of farmers' education on dairy farming knowledge, national food safety standards, animal diseases, and farm production. According to our findings, the milk yield of the cows managed by the farmers of the secondary+ education group is 41 percent higher than those of the primary education group. 54% of the farmers of the secondary+ education group sell milk to the processors compare with 27% from the primary education

group. In addition 64.4% of the farmers of secondary+ education group knew who is the institution in charge with food safety, 72.4% knew about the institution in charge of issuing the animal health certificate, 40.2% new the symptoms of Brucellosis, 43.7% knew the symptoms of TBC compare with 27%, 33.3%, 12.7% and 14.3%, respectively for the primary education group.

In addition significant differences between two groups of farmers (in favor of secondary +education group), are also for the animal identification, farm register, feeding the animals according to the production level, etc.

These findings are indicating the low awareness level among farmers about farm management, animal diseases and food safety.

Public and donors support schemes for farmers should be strongly linked to farm management and food safety and animal health standard implementation.

Well established extensionist/ veterinarians - farmer relationship will lead to economic gains for farmers.

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