ORIGINAL PAPER

ANALYSIS OF THE RELATIONSHIP BETWEEN THE SOCIO-DEMOGRAPHIC CHARACTERISTICS AND SATISFACTION LEVEL OF THE BUFFALO FARMERS: A CASE OF TURKEY

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Abstract

In this study, the relationship between socio-demographic characteristics of the farmers engaged in buffalo breeding and breeders' level of satisfaction was measured and assessed by Chi-square analysis within a sample of Turkey,. Producer data was retrieved from seven provinces of Turkey via face to face survey in 462 farms watching national dispersion of buffalo farms.

The relationship analysis yielded us with the criteria that have an impact on buffalo breeders' decisions and that are not related to the maintenance of activities. There appeared significant relationships between the breeders' satisfaction level and household size, regional orientation, ownership of technology and reach to information sources, productive process development, indebtedness situation, tendency to continue production and non-agricultural job-seeking behaviour. However, age, education level and farm scale were found as factors not related to breeder satisfaction. Therefore, in an era, where animal products market is facing with rising demand due to rising income levels and health awareness, production and marketing policy development should consider the factors that affect producers as well as those of consumers. This is positively related to animal production sustainability for Turkey and relevant developing countries.

Key words: Buffalo, Farmer, Satisfaction, Chi-Square, Socio-demographics, Turkey

INTRODUCTION

Sustainability of agricultural production and public health have become significant concerns for the world. Self-sufficiency of agricultural production is especially important for developing countries due to rising global agricultural and food prices and their adverse effects on public demand. Environmental and health sensitivity and price and quality criteria direct marketing trends in the contemporary process. The primary focus with regards to public health is on the provision of healthy, sufficient and balanced diets. For sufficient and balanced daily nutrition, protein intake is essential, and 40-50% of protein intake should be animal based (Gökalp, 1984; Göğüş, 1986; Karli et al., 2017).

On the contrary, there are significant variations in consumption of animal products between developed and developing countries. Relatively higher prices of animal products and income barriers are the main distracters for those products. It is expected that demand for animal products would rise in the close future due to the rising trend in income levels of developing countries.

Among animal products, buffalo products have niche market characteristics. Buffalo meat is being used for production of sausages and similar products due to its low fat. Buffalo skin is being used in shoe and bag making industries as it is thick enough and buffalo milk is being preferred for the production of cheese, cream and ice-cream and yoghurt with its high fat. Cream produced traditionally in Afyonkarahisar province of Turkey and mozzarella cheese of Italy are examples of successful buffalo products.

Buffalo-breeding is not as widespread as other sorts of cattle breeding due to specific geographical and climatic requirements. While buffalo-breeding is maintained in 34 countries in the world and 195.1 buffalos are bred per year, the most significant producers are India (56%), Pakistan (18%) and China (12%) (FAO, 2018). The number of buffalos in the world had doubled in the last 40 years. Turkey ranks as the 11th in the world with a relatively low share of 0.07 % with 134 thousand buffalo presence (FAO, 2018). While buffalo breeding had attained importance within the period, buffalo stock of Turkey demonstrated a declining trend. However, the interest in the activity has been rising due to the supports provided since 2008. As the variety-genre preferences have been rising in the world, Anatolian buffalo gained attention in Turkey due to external demand. The breeding activities are widespread especially in Blacksea, Central, Eastern and Southern Eastern Anatolia regions. Aegean and Marmara regions of Turkey followed this geographical orientation.

Buffalo breeding takes place mostly for milk production all over the world as the output is a significant ingredient for the dairy industry. The breeding activities do take place mostly in small-scale family farms in developing countries, and this is attached to lower supplies, dispersion of buffalo farms, seasonality of buffalo milk supplies, lower quality of raw milk, insufficient transportation infrastructure. Besides, lack of information on milk-collection and processing as well as hardships encountered in instalments of cooling plants and distance to processing units lead to underdeveloped market chains with lack of hygiene, productive and economic efficiency (OECD/FAO, 2018).

When the producer orientation is observed, it is well-known that the primary objective of animal breeding is profit maximisation. Afterwards, when production activities are acknowledged as vital and prestigious, social benefit gains importance. Accordingly, sustainability of production activities are determined and shaped by economic and social benefits to producers and producer satisfaction. In an era, where marketing approaches are shifting from physiological demand to socio-psychological demand motivation, producer behaviours need to be analysed as well as that of consumers. Finding answers of questions as 'who, for whom, what, how, when, where and how much' related to production directly or indirectly, is expected to provide insights to the development of marketing policy formation that would maximise producer welfare. In this research devoted to seeking producer satisfaction level and correlated socio-demographical criteria, buffalo breeding was selected as a potential sector that should be analysed in depth.

There is limited number of studies searching for the economic and social aspects of buffalo breeding in Turkey. In their study, Özdemir and Özdemir (2016) had searched the structural and technical features of buffalo-breeding and intended to set forward the problems, expectations and potential solution paths considered by the breeders. It was understood that 97.9% of breeders are satisfied with buffalo breeding and they indicated high feeding prices, lack of economic sufficiency and supporting systems as the most crucial problems to be solved.

Sweers et al. (2014) identified the economic feasibility of buffalo breeding in Germany, feeding, aquaculture and direct marketing possibilities. Çiçek et al. (2009) analysed the resource utilisation efficiency in the buffalo farms with Cobb-Douglas production function in Afyonkarahisar province of Turkey.

Gunlu et al. (2010) found that the buffalo milk productivity in Afyonkarahisar province is over 1000 kg per buffalo. Han et al. (2015) reported that the milk productivity of the buffalo per head was less than 1000 kg in Diyarbakır province. In a study carried out in Istanbul, the milk productivity per head is over 1500 kg (Soysal et al., 2015). Soysal (2015) reported that milk productivity was below 1000 kg per head with the Anatolian Buffalo Improvement Project, which was carried out with 25000 buffaloes and 16 provinces.

Niver buffalos' milk productivity is higher than swamp buffaloes. In river breeding, 1800 to 2100 kg of milk can be obtained during a lactation period (Subasinghe et al., 1998). Khan and Akhtar (1999) stated that the milk productivity of Nili-Ravi buffalo breeds was over 2000 litres. Khan et al. (2014) reported that the daily milk yield of Azikheli buffalo in Pakistan is over 7 litres and Macedo et al. (2001) reported that for Mediterranean buffalo breeds, it is 4.52 kg per day. Salari et al. (2013) found that milk yield of 8.47 kg per day could be obtained in Mediterranean buffalo breeds. The daily milk yield was determined to be around 5 kg per buffalo in the findings of studies conducted in Turkey (Borghese and Mazza, 2005; Günlü et al., 2010; Han et al., 2015; Soysal, 2015; Soysal et al., 2015).

It is stated that the buffalo breeding is maintained within the traditional system. For example, in Greece, buffalo breeding is based on grazing all year, and supplementary feeding is reported in November-April (Ligda and Georgoudis, 2005). In Bangladesh, it is also stated that buffalo breeding is based on full grazing (Sarker et al., 2013; Amin et al., 2015).

MATERIALS AND METHODS

The main material of the research is the primary data retrieved from producers. The survey was conducted in seven provinces (Samsun, İstanbul, Diyarbakır, Muş, Tokat, Afyonkarahisar, Bitlis) embracing the national breeding density and aforementioned regional focus. Data was collected via face to face survey and referred to socio-demographic features of producers, business structure, production activities and preferences and producer behaviours. Both scale based multi-selective and open-ended questions were inserted in the questionnaire applied in the field. The sample was determined as 462 breeder enterprises, referring to stratified random sampling and the following formula (Çiçek and Erkan, 1996).

$$n = \frac{(\sum Nh\ Sh)^2}{N^2\ D^2 + \sum Nh\ Sh^2}$$

In this equation;

n: Sample size, N: Total number of units, Nh: Number of units in the cluster, Sh: Standard deviation in the cluster, D: (d/z), where d: Accepted deviation (5 %) and z: Value of standard normal distribution (95 %), Sh^2: Variance of the cluster

The primary objective of this study is to test whether there are significant and interpretable relationships between buffalo breeder's satisfaction level and some of their socio-economic features. Accordingly, producers were asked to scale their satisfaction level on production activities (Likert, 1967) in addition to mentioning their categorised features. Therefore, producers were assessed due to three categories (low, moderate and high) concerning their satisfaction level. The primary data retrieved were analysed in SPSS and correlation, and co-movement relationships of the variables were measured with a Chi-Square test. Due to the available literature, relationship analysis relies on testing the co-existence of a trend between quantitative variables (Moore and McCabe, 2003; Kader and Franklin, 2008). The existence of a linear relationship was measured via Pearson's correlation coefficient ranging from -1 to +1, as the variables were categorised (Pearson, 1920; Blyth, 1994; Zimmerman, 1994). In addition to the correlation analysis co-movement were measured via Chi-Square statistics, which is widely used in marketing research (Kurtuluş, 1998; Blyth, 1994). Accordingly, it is necessary to indicate the variables concerned for measuring the impact on buffalo breeders' satisfaction level. The variables were provided in the below Figure 1.
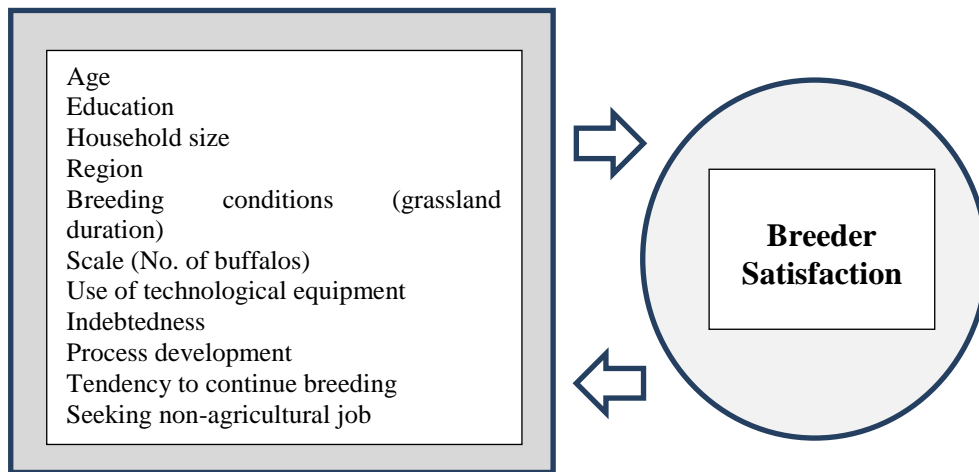

Figure 1. Research Model

With regards to this model, the following hypotheses were tested in the scope of the study.

H_1: There is a significant relationship between the level of satisfaction and age.

H_2: There is a significant relationship between the level of satisfaction and education.

H_3: There is a significant relationship between the level of satisfaction and household size.

H_4: There is a significant relationship between the level of satisfaction and region.

H_5: There is a significant relationship between the level of satisfaction and pasturage duration.

H_6: There is a significant relationship between the level of satisfaction and number of buffalos.
H_7: There is a significant relationship between the level of satisfaction and computer ownership.
H_8: There is a significant relationship between the level of satisfaction and internet reach.
H_9: There is a significant relationship between the level of satisfaction and indebtedness.
H_{10}: There is a significant relationship between the level of satisfaction and process development.
H_{11}: There is a significant relationship between the level of satisfaction and tendency to continue breeding.
H_{12}: There is a significant relationship between the level of satisfaction and non-agricultural job seeking.

RESULTS AND DISCUSSION
Profile of Buffalo Breeders

The factors affecting producer or consumer behaviours can be named as cultural, social, personal and psychological. Cultural factors refer to sub-culture and social class, while social factors refer to reference group effects, family, role models and status. Psychological factors encompass motivation, perceptions, beliefs and attitudes and personal factors include age and family life-cycle, occupation, economic conditions, lifestyle (Kotler, 1967). The impact of these variables on producers and consumers may differ. Producers that spend on inputs and services for production decide on production, operate on industrial market dynamics respecting rational economic directives pay more attention to these factors in the behavioural evaluation. Being a subjective term, satisfaction may differ in meaning. In application, it is not possible to assure 100% satisfaction. In cases where the level of satisfaction is higher, producers tend to continue production, to pay more attention to the process, to increase quality and to focus more on production and marketing. Under these circumstances, the positive return of satisfaction is higher. It is also vital to improve producer welfare and satisfaction in agriculture, specifically in animal breeding in order to meet national and international demands and assure self-sufficiency. Accordingly, the assessment of producer satisfaction with available profile characteristics was considered as essential for the growing buffalo breeding sector.

The identifying features of variables focused on, in the scope of cultural, social, personal and psychological factors, were demonstrated in Table 1. As no female breeders were encountered in the field, the gender variable was excluded. The age distribution was as expected that only 20% of breeders were in the young category while more of the breeders were above the 50s. 17% of the target group holds a Bachelor's degree at a minimum, and this is conformity with the ratio of young breeders. Average education duration was 6.27 years, which can be related to old age group above the 50s. Household size demonstrated rural characteristics as expected and average number of people in the family was 8.04. Also, most of the breeders have families with 6 or more members. The regional dispersion of breeders was also in conformity with productive orientation as two-thirds of the breeder's operate in Eastern, Southeastern Anatolia and Black sea regions.

The farm scale was considered, a significant share of buffalo farms composed of the 1-15 head of buffalos group. One-third of the farms seemed to be large scale as they host more than 36 buffalos. Concerning productive conditions, while grassland ownership, duration and accessibility vary among farms, the productive methods mostly rely on six months or more pasturage.

When access to technology was considered, it was understood that 30.7% of farms had computers in their inventories, while internet instalment was available in 26.4% of the farms. As another indicator, the evolution of indebtedness situation was measured, and it was understood that there was no significant change or declination in 55.5% of farms. There observed an improvement in focusing on buffalo breeding in the last five years in one-third of the farms. In accordance, 85.3% of breeders seemed to have a tendency to maintain buffalo breeding, signifying a high level. However, breeders indicated that their tendency to seek non-agricultural had risen by almost 45%.

Table 1. The socio-demographic characteristics of the producers (N=462)

Variables	Freq.	%	Variables	Freq.	%
Age:			*Technological device ownership*		
Below 50	100	21.6	PC	142	30.7
50 and above	362	78.4	Internet	122	26.4
Average: (46.21 years)					
Education:			*Indebtedness:*		
Primary-secondary	383	82.9	Reduced	31	6.7
Tertiary	79	17.1	Stable	221	47.8
Average: (6.27 years)			Increased	210	54.5
Household size:			*Process development:*		
1-5 members	226	48.9	Reduced	50	10.8
6 and above	236	51.1	Stable	78	16.9
Average: (8.04)			Increased	334	72.3
Region:			*Tendency to continue breeding:*		
Marmara	69	14.9	Low	37	8.0
Aegean	63	13.6	Indecisive	31	6.7
East-South Eastern	164	34.0	High	394	85.3
Blacksea	166	36.0			
Scale (no of. buffalos):			*Non-agricultural job seeking:*		
1-15	205	44.4	Reduced	23	5.0
16-35	100	21.6	Stable	231	50.0
36 and above	157	34.0	Increased	208	45.0
			Level of satisfaction:		
Pasturage duration			Low	44	9.5
0-5 months	225	48.7	*Moderate*	107	23.2
Six months and above	237	51.3	*High*	311	67.3

The relationship between Producer Satisfaction Level and Socio-Demographic Characteristics

In this section, the findings retrieved from Chi-Square relationship analysis were indicated. Firstly, there appeared no significant relationship between the level of satisfaction and age, meaning age does not affect producers' satisfaction. Therefore, the first hypothesis was rejected. Secondly, there was no linear relationship or co-movement between the level of satisfaction and level of education. Accordingly, the hypothesised relationship focusing on education was rejected as well.

However, one of the most significant outputs of this study is the correlation between the level of satisfaction and household size. This signified importance of traditional crowded family structure in the agricultural sector as more family members meant more satisfaction. Therefore, household size appeared as a significant demographic factor affecting producers' satisfaction with buffalo breeding. In other words, breeders having less non-paid family labour seemed to be more satisfied. Therefore, formatting supporting policy and tools directing producer satisfaction should focus on household size or family labour. When the farm scale and household size were considered simultaneously, small-scale family farming is mostly related with the family structure. In small scale of production, accompanied with non-paid family labour, it is possible to hand in low expectations on productive activities bur more producer satisfaction. The linear correlation observed between household size, and level of satisfaction for this survey supports the evaluation above. In some studies, it was explicitly noted that buffalo milk production in Turkey is mostly maintained in small-scale family farms in the village conditions (Şekerden et al., 2005; Borghese and Mazzi, 2010; Akbulut and Yazıcı, 2011; Şahin et al., 2013; Işık and Gül, 2016; Özdemir and Özdemir, 2016; Akpinar et al., 2018; Karli et al., 2018).

There are differences observed in production scale and density, amount and prices of inputs and marketing opportunities due to the production region. According to this expectation, there expected a variation in the level of satisfaction due to the region that the farm takes place. Verifying this expectation and the relevant hypothesis, we found a statistically significant relationship between the producer satisfaction level and region of production. Development of region-oriented supportive mechanisms and determination of market prices on public and private level would be contributory to buffalo breeders and economic output of the activity. As an instance, it is possible to face higher breeder satisfaction and increasing yields, if geographical dispersion is considered in the provision of public supports per buffalo or per kg of buffalo milk. Due to the measured linear relationship, Eastern and Southeastern Anatolia was the region where breeder satisfaction is highest, while it is vice versa in the Aegean region. The level of satisfaction was moderate in the Black Sea region.

The relationship between grassland use and breeder satisfaction was investigated in the scope of our study as well. In the essence of animal breeding, with an emphasis on buffalo breeding, factors like irrigated and grassland availability, opportunities to use grasslands, pasturage duration can be sufficient on profitability and quality of products. Meat and milk production maintained on grasslands both lead to a reduction in feed expenditures and rise

in industrial and consumer level demand. Accordingly, these sorts of breeding activities may provide a higher return on breeding. Pasturage duration appeared as a significant factor in the level of satisfaction. The positive correlation between production conditions and level of satisfaction were confirmed with 95% level of statistical significance. Subsequently, breeding field conditions appeared as an essential factor in the development of breeding processes. Some studies are confirming the importance of geographical conditions in buffalo breeding (Özdemir and Özdemir, 2016).

Also, it is possible to mention a positive relationship between farm scale and profitability. As a result of fixed cost reduction per unit of production, total costs are expected to decline and profitability to increase with increasing scale of production. Therefore, there expected a positive relationship between rising profitability and rising producer satisfaction. The relationship between scale and level of satisfaction was interpreted. Number of animals was considered as a measure of scale accordingly. Surprisingly, there observed no relationship between the number of animals kept and breeder satisfaction, and the relevant hypothesis was rejected. So forth, a rise in number of buffalos in the farm is not a factor in directing the level of satisfaction upwards. This situation can be rrelated to differing marketing conditions, sales price and payment conditions are irrespective of the declining production costs.

Similarly, no significant relationship was observed between a gross and net profit of farms and breeder satisfaction. A primary result that can be drawn is such that marketing conditions and problems should be considered in buffalo breeding, which is still a rare animal production activity.

Also, access to information sources and level of technology used are also important for planning and development of production activities in agriculture and animal breeding. For development of market-oriented agricultural production, the consciousness of producers or breeders is essential for the case. Accordingly, it is vital to get acknowledged on demand and expectations of the target market, the evolution of market structure, price formation and status of intermediaries. Also, producers need to reach information on development of production methods and technologies and on evolution of animal welfare assurance for process development. With this respect, the existence of a relationship between information access and breeder satisfaction was tested. Computer ownership was the initial consideration of this case and there detected a significant linear relationship at 90 %. In conformity with the expectations, farm level ownership of computer equipment contributes to rising breeder satisfaction, and the relevant hypothesis was accepted.

Besides, along with technological endowments, reach to the internet in the contemporary global world was considered as well. Due to Chi-Square results, there appeared a significant relationship between the satisfaction level and online information reach as well. According to this view, farm level record keeping and monitoring, marketing communication, conscious production watching the recent improvements affect the development of satisfied buffalo breeder model positively.

One of the significant criteria to be assessed is the tendency to bear debts or variation in indebtedness situation. This factor is eligible for interpretation of economic satisfaction level by disposable income and saving attitudes. Therefore, the effect of indebtedness situation on the level of satisfaction was searched within this study. Confirming the expectation, rising debts of farms and breeders affect satisfaction level inversely signing the negative relationship. Therefore, existence of an inverse linear relationship was confirmed and the hypothesised impact was accepted.

The scale of production and width of the buffalo farms were considered to be useful as the scale signs adequacy or inadequacy of finance and lacking agricultural finance for production process development. But the channels used to meet financial requirements, credit reach and use, cost and return on credits need to be considered in farm management. Additional finance requirements directly related to productive activities, in case of non-proximity of equity capital with the requirements, lead to rising indebtedness of the breeder. This situation mostly leads to suppression of the farmer in agricultural production, where risks and uncertainty are visible. Therefore, by rising productive scale, income insufficiency or high level of tendency to spend on inputs or necessities lead to rising credit demand of farmers.

Another aspect focused on this study is the sustainability of buffalo breeding concerning changing the density of activities. The change in scale or production methodologies encompassed in process development assumed to effect level of satisfaction as well. Referring to the test results, the relationship between process development and breeder satisfaction was confirmed, and the hypothesis was accepted. When briefly explained, the tendency to progress affects producer motivation and willingness to focus on productive activities. This increasing willingness also affects farmer satisfaction positively as expected. Vice versa, considerations to lower the scale are negatively related with the satisfaction level, by declining motivation.

Besides, development of production activities and process improvement is related with producer motivation and marketing infrastructure in the region and country, where the activities are pursued. Level of productive processed

and potentials for improvement have impacts over producer motivation and productive scale enlargement accordingly.

Breeder's level of satisfaction is also crucial in his tendency to continue activities. Producers' reflection might vary in vegetative and animal production in this essence. While producer prices and income retrieved from activities vary in year after year for vegetative production, the change in production decisions take more time in animal breeding. This is due to the structural requirements, instalment costs and time dependency of animal breeding activities. Therefore, the shift between productive activities and moving out of animal breeding activities are rare, and the behavioural stance is more stable. In accordance, when buffalo breeding was considered, it can be seen that the tendency to enter and exit breeding activities are much lower and leaving out of the sector is much costly and more time demanding. Accordingly, the tendency of buffalo breeders to continue their activities and its relationship with the level of satisfaction was searched. Subsequently, there detected a statistically significant positive relationship between these two variables. As the level of breeder satisfaction rises, the tendency to maintain activities rises powerfully as well. It can be said that potential to maximise producer welfare leads continuity of buffalo breeding activities.

Finally, there expected a linear relationship between the satisfaction level of breeders and their tendency to seek non-agricultural jobs, signing the sustainability of activities. Non-agricultural employment potential of producers or breeders for this case can be attached to the inadequacy of farm income, availability of current spare time and need to create additional income or to termination of activities with migration from rural to urban regions. When the need of keeping the rural population on the field to assure agricultural self-sufficiency and sustainability of agricultural production are considered as essential agricultural policy objectives, the tendency of farmers to leave production becomes more prominent. The data analysis indicated a significant relationship between satisfaction and non-agricultural job seeking. Concerning the expectations, declining breeder satisfaction leads to more job-seeking actions. A significant indication of this partial analysis is that the breeders satisfied with the activities on average tend to move out of buffalo breeding more than the lower of higher satisfaction levels. This signs the dependency of small-scale family farms on their lands and income-satisfaction encountered in large-scale farms.

Following these real explanations, the Chi-Square test results and the status related with acceptance of hypothesised relationships were demonstrated statistically in the below Table 2.

Table 2. Relationship of Socio-demographic Factors with Buffalo Farmers Satısfaction (Chi-square test)

Socio-demographics variables /	Farmer Satisfaction Level		
	Pearson X^2	P value	Accept / Reject
H_1 (Farmer age)	3.536	0.171	Rejected
H_2 (Farmer education)	1.833	0.400	Rejected
H_3 (Household size)	**6.260**	**0.044****	Accepted
H_4 (Region)	**29.763**	**0.000*****	Accepted
H_5 (Production condition- pasture)	**6.348**	**0.042****	Accepted
H_6 (Production scale- number of buffalos)	0.282	0.868	Rejected
H_7 (Computer ownership)	**5.333**	**0.070**	Accepted
H_8 (Internet reach)	**10.625**	**0.005****	Accepted
H_9 (Indebtedness)	**9.045**	**0.060***	Accepted
H_{10} (Process development)	**34.399**	**0.000*****	Accepted
H_{11} (Tendency to maintain breeding)	**42.047**	**0.000*****	Accepted
H_{12} (Non-agricultural job seeking)	**14.264**	**0.006****	Accepted

*, Significant at 90%; **, Significant at 95%; ***, Significant at 99%

CONCLUSIONS

Within this study, significant emphasis was on determination of buffalo breeders' satisfaction level and its interrelationship between socio-demographics of the breeders. When considered with full extent, there are absolute differences in production, market and producer profiles of vegetative and animal production related to the characteristics of activities. Demand for animal products has been rising both in internal and external markets due to rising income levels. Enlargement of the consumer market is expected to lead a potential for development of the producer market. However, due to both production conditions and market specialities of final products, buffalo products have lower demand than other animal products. In a market-oriented definition, sustainability of production relies on maintenance of marketing and producer satisfaction accordingly. Producer satisfaction is interrelated with consumer satisfaction, raising awareness and development of the market with a marketing point of view. Motivating consumer satisfaction is also related to raising producer satisfaction and improvement of marketing chains and structures in other terms.

Lack of market demand and weak market structures also result in negative producer reflections and non-progressive stance in breeding.

To understand the factors affecting producer motivation and willingness in buffalo breeding, the producer satisfaction level in Turkey was searched, and the relationship between the measures and socio-demographic features of producers were analysed in a sample of 462 breeders. The factors searched were personal, psychological, social and cultural. Due to the relationship analysis, it was understood that there were direct relationships between the breeders' satisfaction level and household size, regional orientation, ownership of technology and reach to information sources, productive process development, indebtedness situation, tendency to continue production and non-agricultural job-seeking behaviour. However, main personal indicators like age, level of education and farm scale, as a sign of economic withholding, seemed not to be related. A significant finding reached as a result of the Chi-Square analysis was the stability of satisfaction level concerning animal ownership.

Level of satisfaction has an impact over non-progressive challenges or lack of process development and the tendency of non-agricultural job-seeking. Increasing indebtedness is negatively related with the breeder satisfaction as expected. A significant indication is more family members lead to more satisfaction level, and this can be read as the family farm structure of buffalo breeding activities. Also, regional variation dependency of satisfaction level inferred in this study should be considered as beneficial for supportive policy and tool development for buffalo breeding. The producer satisfaction is essential especially for animal breeding activities as the change in satisfaction may lead change in producer preferences and supplies. With the need to improve animal stock and animal products' markets, producer consideration, satisfaction and decision-making process should be monitored closely. Both production and marketing policies should focus on increasing producers' welfare.

Changes in satisfaction and expectation level can bring changes in the preference of producers. In this respect, it is recommended that the producer satisfaction index is calculated and monitored during specific periods.

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