Full Length Research Paper

Livestock producers' needs and willingness to pay for extension services in Adana province of Turkey

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There is an ongoing argument about user fees in public agricultural extension services. In Turkey, Ministry of Agriculture and Rural Affairs' Farmers Education Division provides agricultural extension services free of charge to increase farmers' living conditions. In this study, the livestock producers' information needs and willingness to pay for extension service was analyzed with using a survey data of producers in Adana province, Turkey, 2005. Contingent valuation method was used to measure livestock producers' willingness to pay for agricultural extension service. First, producers' needs toward agricultural extension service were determined, then, the respondents were asked if they were willing to pay a price for a well designed and directed extension service. It was found that producers' most needed information was marketing of their products. It was determined that, 52.5% of producers were willing to pay for extension service. Producers' education had no effect on their willingness to pay for extension service, while the number of herd size had a positive relation with willingness to pay.

Key words: Extension, livestock, willingness to pay.

INTRODUCTION

The Government of Turkey has expressed its commitment to increasing agricultural production, improving human diet and raising the quality of life of its people. Towards this end, the Ministry of Agriculture and Rural Affairs (MARA) has embarked on innovative projects aimed precisely at increasing small farmer productivity (Bostan and Agunga, 1999). To reach this aim, public extension service is trying to reach many farmers with limited resources free of charge like in other developing countries. As Baxter et al. (1989) pointed that public extension service is not able to indicate the total recurrent and capital cost of its extension operations anymore. Governments are trying to develop an alternative income source for extension activities because of the increasing budget cuts. Therefore, in a bid to promote farmers participation in extension finance, various forms of payments for agricultural extension services by

farmers have been instituted in some parts of the world (Rivera and Cary, 1997), like in the United Kingdom, Netherlands, Sweden, Germany, Chile and Portugal. This trend would reduce the economic burden on government and increase the efficiency and effectiveness of extension (Shekara, 2004).

Contingent valuation method (CVM) is a new application to evaluate the agricultural research and extension programs (Whitehead et al., 2000). Extension educators find CVM as a relatively simple method to measure citizen attitudes toward programs and issues (Blaine et al., 2003). Several studies have been conducted about farmers' willingness to pay (WTP) for agricultural extension services (Whitehead et al., 2001; Roe et al., 2004; Yapa and Ariyawardana, 2005; Ajayi, 2006; Oladele, 2008). Willingness to pay estimates differs among Carolina households between food production and water quality programs (Whitehead et al., 2001). The majority of farmers' in Oyo State, Nigeria, willingness to pay for extension services, is if their income from farming would increase and the programmes be made relevant to them (Ajayi, 2006).

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Yapa and Ariyawardana (2005) found out that tea small holders' in Galle district in Sri Lanka have a minimal interest towards a fee-based extension service and hence implementation of a private advisory service in the tea smallholding sector is not viable. This study is aimed to define livestock producers' needs and willingness to pay for agricultural extension service. The specific objectives of this paper are to identify the major information needed by livestock producers, if they are willing to pay for extension service and to determine how much they are willing to pay for it.

METHOD

This study was carried out in Adana villages. A group of 80 households in six villages of the Yüregir administrative district were selected randomly for this study which represents about 15% of the estimated 540 households in these six villages. The villages were selected by the number of livestock and the intensity of their livestock production. The data were derived from producers with a questionnaire. The questionnaire was implemented face-to-face by the researchers in June, 2005. Livestock producers' willingness to pay for extension services was determined using CVM. First, producers' needs toward agricultural extension services were determined, then, how much they are willing to pay for a well designed and directed extension service was found. Probit model binary choice was used for the determination of factors affecting producers' WTP (Green, 1995). The univariate probit model for a binary outcome is:

$$y = \beta' x_i + \varepsilon_i$$

Where;
$$y_i = 1 \text{ If } z_i > 0 \text{ and } y_i = 0 \text{ if } z_i \leq 0,$$

$$\varepsilon_i \sim N(0, 1)$$

The probit model computes the maximum likelihood estimator of the given non-linear probability distribution of the random error ε_i. The variables are: X1= WTP (0, if the producer is willing to pay; 1, if the producer is not willing to pay), HERSIZE, X3 = BREED (0, if the animal is a native breed; 1, for cross breed), X4 = MARKET (0, if the production is for own use; 1, for the market), X5 = DISTANCE (distance from extension service), X6 = FARMTYPE (0, if only livestock; 1, for both crop and livestock), X7 = EDUCATION, X8= AGE.

RESULTS AND DISCUSSION

The respondents were predominantly male (97.5%) and the average household size was 5.5 persons. The mean average age was 47.58, ranging from a low of 24 to a high of 75 years. Among the respondents, 51.25% of them had no farming area. The average number of livestock is 10.25 herds with a standard deviation of 11.38. Producers' keeping of livestock were mainly for own consumption (13.75%) and marketing purpose (86.25%). The respondents' education level was low, with

majority of them (55.0%) having a primary education level. Marketing ranked number one as major needed information in this study. None of the producers registered to any kind of cooperative, so they had to sell their milk at a low price at the villages (0.4YTL/kg). The next major needs mentioned by producers were an advice on animal health and disease diagnosis. Mostly during dry season, forage quality and quantity need arise as an important problem on increased livestock production yield (Table 1). Poor infrastructure in the research area is also an obstacle for development of livestock production. Marketing and management problems especially in milk marketing discouraged many producers as well. Knowing the major sources of information is important for disseminating new materials related to livestock. For this reason, the respondents were asked to reveal their main information sources in livestock production and they are listed in Table 2. Other producers and veterinary staff were the primary source of information on new livestock management strategies, whereas drug sellers, head of villages/teachers, extension workers and media were reported as information sources for 1.19, 0.95, 0, 84 and 0.78 respectively.

The probit model was used to generate results on livestock producers' willingness to pay for agricultural extension service. It was found that 52.5% of producers are willing to pay for agricultural extension service. It appears that variable herdsize plays a significant and positive role for WTP among surveyed producers. Producers with larger herd sizes are expected to pay because they are likely to depend more on income from livestock. On the other hand, education had no significant role and negative impact on WTP. Those with some higher degree appear to have no WTP than those who had no schooling experience. Educated producers are not willing to pay for an extension service because they expect these services from the government. Black and Dorfman (2000) pointed that producers who are more educated are likely to have off-farm employment, which may have a negative impact on preferences.

In this study, producers are defined into two groups; production for marketing (MARKET) and own consumption. The MARKET variable had a positive and significant role on WTP. The variables BREED and DISTANCE were also positive and significant in probit model (Tables 3 and 4). The distance from the extension service had a significant and positive effect on producers' willingness to pay. Producers who live far away from the extension service were willing to pay because they are more likely to depend on extension service for information than the other producers.

Conclusion

It can be concluded from the analysis that herd size had

Table 1. Information needs of livestock producers (scores on 4 point Likert scales, ranging from (1) not important to (4) very important).

Needs	Mean	Standard deviation
Castration	0.50	0.71
Insurance of animal	0.78	0.88
Artificial insemination	1.49	1.18
Deworming	1.63	0.98
Meat inspection	1.66	1.08
Wound treatment	1.67	0.89
Treatment of skin diseases	1.90	1.00
Vaccination (immunization)	1.91	0.81
Bathing against ectoparasites	2.09	0.78
Increase yield	2.27	0.92
Disease diagnosis	2.34	0.76
Advice on animal health	2.35	0.80
Marketing	2.51	0.86

Table 2. Primary source of Information on livestock production (scores on 4-point Likert scales, ranging from (1) never to (4) very frequently).

Sources	Mean	Standard deviation
Extension workers	0.84	0.60
TV, radio, newspaper	0.78	1.00
Teacher/head of village	0.95	0.91
Drug sellers	1.19	0.95
Veterinary staff	1.25	0.67
Other producers	1.89	0.89

Table 3. Summary statistics and variable description.

Variable		Definition and coding	Mean	Standard deviation
WTP	0	If the producer is not willing to pay	0.525	0.502
	1	If the producer is willing to pay		
Herdsize		Number of head	14.0500	16.000
Breed	0	If the animal is native breed	0.125	0.332
	1	If the animal is cross breed		
Market	0	If production is for own consumption	0.862	0.346
	1	If production is for market		
Distance		Distance from extension service (km)	18.405	13.648
Farmtype	0	If only livestock production	0.487	0.502
	1	If livestock and crop production		
Education	1	If can't read or write	2.912	1.149
	2	If can read or write		
	3	If elementary school graduate		
	4	If middle school graduate		
	5	If at least high school graduate		
Age		The age of producer	47.575	12.495

Table 4. Probit model results.

Variable	Coefficient	P Value
Constant	-2.2567***	0.0066
Herdsize	0.4056*	0.0581
Breed	1.4576**	0.0457
Market	1.2611*	0.0505
Distance	0.4871***	0.0009
Farmtype	0.3976	0.9906
Education	-0.8560	0.5590
Log likelihood	-39.1171***	
χ^2	32.4693	
N	80	

*, **, *** indicates statistical significance at the 0, 10, 0, 05 and 0, 01. respectively

a positive effect on producers' willingness to pay for extension services. Livestock producers with large herd sizes depend more on the income that comes from livestock than producers with smaller herd sizes. For this reason, they may prefer to pay for an extension service. Not only size, but also the breed type of the animal had positive relationship with WTP. If the producers had more cross breed animals, they would want to pay for extension services.

The distance from the extension service had a significant and positive effect on producers' willingness to pay and as a result, producers who live far away from the extension service were willing to pay. It was found that 52.5% of producers were willing to pay for agricultural extension services. It was also determined that, producers are willing to pay 3.79 YTL per visit and wished for an average of two visits per month. The study revealed that producers' major needed information was marketing. Results for the WTP analysis implied that producers were eager to improve their livestock production. Turkish Government can pursue a cost recovery approach of private extension services for producers with large herd sizes. On the other hand, the government extension service should continue to provide free information for low income producers.

ACKNOWLEDGMENTS

REFERENCES

Ajayi AO (2006). An assessment of farmers' willingness to pay for extension services using the contingent valuation method (CVM): the case of Oyo State, Nigeria. J. Agric. Edu. Extension 12(2): 97-108.
Baxter M, Slade R, Howell J (1989). Aid and agricultural extension: evidence from the World Bank and other donors. World Bank Technical , The World Bank, Washington, DC. pp. 87.
Blaine TW, Lichtkoppler FR, Stanbro R (2003). As assessment of residents' willingness to pay for gren space and farmland preservation conservation easements using the contingent valuation method (cvm). J. Extension 4(4): 1-13.
Black DL, Dorfman JH (2000). Identifying farmers characteristics related to crop insurance purchase decisions. SelectedPaper. American Agricultural Economics Association, Summer Meeting, Tampa Florida.
Bostan BD, Agunga R (1999). Agricultural extension and communication in Turkey. J. Agric. Faculty, University of Cukurova 14(3): 15-22.
Green WH (1995). Limdep Version 7.0: User's Manual, Econometric Software, Bellport, N.Y.
Holloway GJ, Ehui SK (2001). Demand, supply and willingess-to-pay for extension services in an emerging-market setting. Am. J. Agric. Econ. 83(3): 764-768.
Oladele OI (2008). Factors determining farmers' willingness to pay for extension services in Oyo State, Nigeria. Agricultura Tropica Et Subtropica 4(14): 165-170.
Rivera WM, Cary JW (1997). Privatizing agricultural extension. In: Swanson, B.E., Bentz, R.P. and Sofranko, J.A. (Eds), Improving Agricultural Extension: A Reference Manual. Rome: FAO pp. 203-211.
Shekara PC (2004). Status of private extension in India. Available online at: http://www.manage.gov.in/pvtext/pvtExt.htm_.
Turkson PK, Naandam J (2003). Assessment of veterinary needs of ruminant livestock owners in Ghana. Prev. Vet. Med. 61: 185-194.
Whitehead JC, Clifford WB, Hoban TJ (2000). WTP for research and extension programs: divergent validity of contingent valuation with single and multiple bound valuation questions. Working papers 0002, East Carolina University, Department of Economics.
Whitehead JC, Hoban TJ, Clifford WB (2001). Willingness to pay for agricultural research and extension programs. J. Agric. Appl. Econ. 33(1): 91-101.
Yapa KDAJ, Ariyawardana A (2005). Willingness to pay for a fee-based extension service by tea smallholders in Galle District. Sri Lankan. J. Agric. Econ. 7: 66-84.