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Village Poultry Farming in the Canakkale and Antalya Provinces in Turkey: The Prevalence and Relationships with Some Socio-Economic Indicators

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Abstract: The aim of the study was to determine the extent of VP farming in the rural areas of the two provinces in Western Turkey and to analyze the relationships between VP farming and some socio-economic characteristics. Two different surveys were conducted in the countryside of Canakkale (S1) and Antalya (S2). Face to face interviews were carried out with a total of 122 (S1) and 224 (S2) women in the villages. As the sampling methods and questionnaires of the two surveys were partially different, the data relating to the provinces were not compared with each other statistically. The proportion of housewives with minimum 5 years education in S1 and S2 were 82.8 and 67.8%. Most of the families were engaged in subsistence agriculture. A considerable number of households are not involved in agricultural production any more; they only reside in the village. It was determined that 84.4 and 88.8% of the households were involved in VP in S1 and S2. Almost, all flock owners were women with men generally helping out whilst children had no role. Some evidence was found indicating that low income levels increase the proportion of VP farming. However, VP regarded as part of rural life, of the VP farmers, 84% of stated they would continue VP farming even if their income levels were higher. The proportion of those who were involved in VP among field crops producing farmers was higher ($p<0.05$) for both surveys. In S2, the occurrence of VP was higher in the following groups: larger households, having various sources of income and agricultural income, rearing non-poultry livestock and having higher land size ($p<0.05$, in all). The families who live like farmers in the village are more likely to be involved in VP.

Key words: Village poultry, prevalence, socio-economics, crop production, agricultural income, Antalya, Canakkale, Turkey

INTRODUCTION

Despite the rapid global development of the commercial poultry industry, it has been estimated that still >80% of the world's poultry population occurs in traditional family-based production systems and that the latter contribute up to 90% of the total poultry products in many countries (Gueye, 2005a; Mack *et al*., 2005). Therefore, commercial poultry production, which is becoming increasingly industrialized, will continue to co-exist with household or Village Poultry (VP) farming for a considerably long time (Mcleod *et al*., 2009).

VP displays some common characteristics, although minor variations from one country to another. Households involved in this type of production which is also called family poultry farming usually specialize in small-scale agriculture (Muchadeyi *et al*., 2005) and generally the education level of the families is quite low (Halima *et al*., 2007; Aboe *et al*., 2006a). It is usually, women and children who are responsible for rearing VP (Kondombo *et al*., 2003; Dessie and Ogle, 2001). The primary aim of VP farming in many African countries is meat production; egg yield, votive offerings and income generation are the other purposes (Muchadeyi *et al*., 2007; Aboe *et al*., 2006b; Kondombo *et al*., 2003; Mwalusanya *et al*., 2002).

In some countries commercial poultry sector and extensive village poultry farming co-exist (Mcleod *et al*., 2009). Being one of these countries, Turkey has a typical transition economy with a 29.5% rural population. In fact, Turkey is one of the few countries, where the commercial poultry industry has developed most successfully in the last 30 years. The Turkish poultry sector used to consist entirely of small scale family poultry production enterprises up until 1970s; following rapid development, large scale production capacity has been achieved. The

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production figures in 2008 were 1, 069 696 tons of chicken meat and 1, 123, 022 tons of poultry meat. Egg production in 2008 was 13.2 billion.

VP farming has been constantly ignored by academics and relevant institutions in Turkey. The existence of an advanced commercial large-scale poultry industry appears to justify ignoring village poultry farming. In fact, according to Gueye (2005b), small-scale poultry farming is not yet regarded by many researchers, development and extension workers as an area of importance in terms of political significance or scientific prestige. However, it is promising to see that village poultry has already started to receive attentions in Turkey (Sekeroglu and Aksimsek, 2008; Aksoy *et al*., 2008). The aim of this study was to determine the extent of VP farming in the rural areas of the two provinces in Western Turkey and to analyze the relationships between VP farming and some socio-economic characteristics.

MATERIALS AND METHODS

Study area: The study covered two surveys carried out in the countryside of two purposefully selected provinces in Turkey. The location of the provinces and the villages surveyed are shown in Fig. 1a-c. Survey 1 (S1) was carried out in Canakkale located in the Northwest of the country (latitude 40°09'N, longitude 26°24'E). An intermediate climate between Black Sea and Mediterranean prevails in the province which has coasts on the Aegean and Marmara Seas. Survey 2 (S2) was carried out in Antalya located in the South of the country (latitude 36°53'N, longitude 30°42'E) on the coast of the Mediterranean Sea.

Sampling procedures and data collection: Twelve villages from various areas of the Canakkale (S1) countryside were discretionally selected (Fig. 1b). Ten percent of the households in each village was randomly selected and surveyed. The total number of surveys completed was 122.

The three-stage cluster sampling method (Malhotra, 2007) was applied when selecting the respondents to represent the province of Antalya (S2). For this purpose, first the Antalya province map was split into 16 clusters clockwise from east to west. Four of the clusters which include both coastal and inland areas were randomly selected. In the second stage, 8 villages were again randomly selected from the four clusters. In the third and final stage, 7 randomly selected households were interviewed in each village, producing a total sample size of 224 (4 clusters × 8 villages × 7 households). The locations of the villages are marked in Fig. 1c.

In the preliminary stages, it is observed that women were usually responsible for rearing VP. Therefore, the questionnaires were administered to the women in the households, while men were usually not at home during the daytime. The questionnaires containing closed and semi-closed questions were prepared with participatory rural appraisal and this approach was also maintained

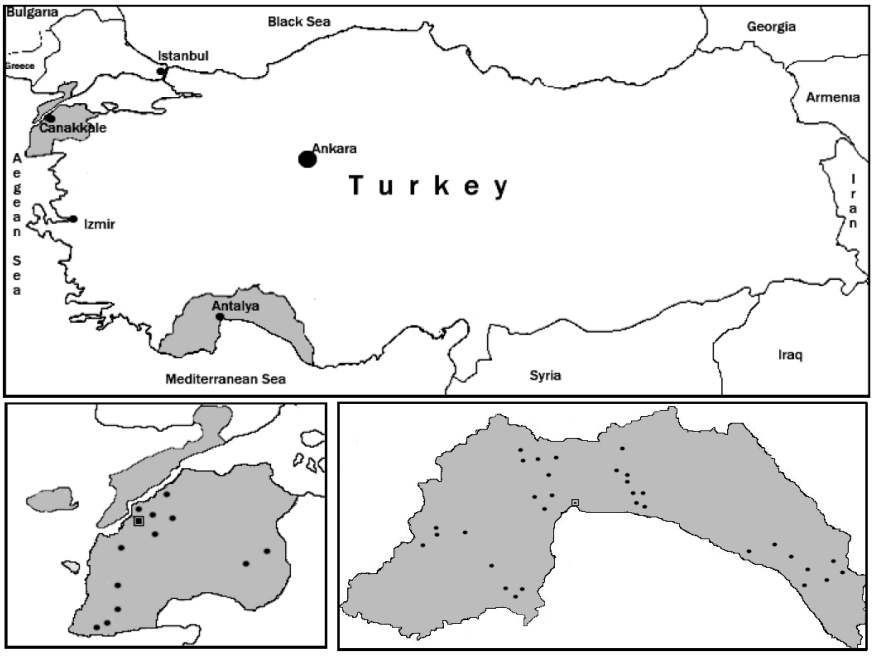

Fig. 1: Map of the provinces and villages surveyed in Turkey

during the interviews (Muchadeyi *et al*., 2005; Henning *et al*., 2006) which were carried out in environments, where two or more members of the household and/or neighbours were present. In the light of the findings from S1, the questionnaire for S2 was improved more thoroughly. Although, the two survey questionnaires were similar to a great extent, there were some differences. All of the questionnaires were administered personally by the researchers in face to face interviews either in the women's house or garden. Each interview took approximately half an hour.

The first section of the questionnaires contained questions related to socio-economic situation and general farming, such as age and education level of the housewives, household size, net income of the family (in S1 only), primary and other sources of income (crops, livestock and non-agricultural), whether they planted field crops. Also, recorded in S2 only, were the amount of land the family owned and cultivated and the number of non poultry livestock defined as Livestock Unit (LU) where 10 sheep or goat are equivalent to 1 cow (Aboe *et al*., 2006a).

The second section of the questionnaires contained questions related to VP farming: whether they rear village poultry, reasons if not and who was responsible for rearing the poultry. We also asked the VP keeper If your income was higher and you continued to live in the village, would you continue this type of production.

Data processing and statistical analysis: Following the completion of the questionnaires and prior to statistical analyses, the income levels of the villages included in the surveys were defined based on the information obtained from the Provincial Directorates of Agriculture. The villages, which do not have land of the quality and quantity required for agricultural production and have inadequate irrigation facilities were defined as Poor (P). The villages, which have adequate land and suitable irrigation facilities, where relatively lucrative production forms such as greenhouses, fruit and vegetable production are widespread were defined as Rich (R) and those in between the two groups were considered as Medium (M).

In S1, 40 households (32.8%) were from villages that could be considered as P, 32 households (26.2%) were in the M category and 50 households (41%) were in the R category. In S1, the average individual income of the R villages (76.54 USD/person/month, SD = 46.56) were calculated to be higher ($p<0.05$) than those of M category (54.86 USD/person/month, SD = 28.79) and the P category villages (56.32 USD/person/month, SD = 38.51). The P and M category villages that were found to be similar in terms of individual income averages were combined into one group and termed Poor-Medium (P-M) and analyses performed with these revised groupings in S1. This also had advantages for the Chi-square (χ^2) analysis. In the sample group representing Antalya (S2), 57 households (25.4%) would qualify as P, 124 (55.4%) M and 43 (19.2%) R; analyses were done for these three different village income groups.

In order to analyze the relationships between VP farming and some socio-economic characteristics, several statistical methods (Mead and Curnow, 1983) were applied and those which explain it most meaningfully were chosen. Chi-square analysis was used to identify the relationships between categorical data, t-test for independent group comparisons, F-test for multiple comparisons and Duncan test for analyzing group differences. Descriptive statistics and graphics were also used. Data analysis was performed using SPSS® software package (SPSS. Inc., Chicago, IL, USA). As the sampling of the two surveys was completely different and the questionnaires partially different, the data relating to the two regions were not compared with each other statistically.

RESULTS AND DISCUSSION

The socio-economic status of households: In S1, 67% of households consisted of 1-4 members, while the remaining 33% were made up of households which had >4 members. Fifty two percent of households consisted of 1-4 members and 48% had >4 members in S2. The household sizes of the respondents in S1 and S2 (4.02 and 4.59 members per household) were somewhat smaller than those identified in studies on VP farming in Africa (Halima *et al*., 2007; Muchadeyi *et al*., 2007; Aboe *et al*., 2006a).

The education level of the women in the two surveys has shown in Table 1. While, the proportion of illiterate housewives was 4.9% in S1, it was 26.8% in S2. The proportion of women in S1 an S2, who have had a minimum of 5 years of education was 85.6 and 67.8%, respectively. In a recent study, Davran *et al.* (2009) determined that the proportion of women having a minimum of 5 years of education was 65.4% in the Taurus mountain villages in the Mediterranean region of Turkey; that region is located near the Antalya (S2). In another study among semi-intensive grazing Turkey producers in the North-West of Turkey, which is also nearby the location of Canakkale (S1), Tan *et al.* (2004) identified that 87.3% of females over the age of 7 had 5 or more years of basic education. These studies and the findings establish that the education levels of

Table 1: Education level of the women (%)

Education level of the women	S1	S2
Illiterate	4.9	26.8
Can read and write	9.5	5.4
5 years education	82.4	63.8
>5 years education	3.2	4.0
Σ	100.0	100.0

S1: Survey 1, S2: Survey 2

women in villages in Western part of Turkey are considerably higher compared to most other countries, where VP farming is prevalent (Banga-Mboko *et al*., 2007; Halima *et al*., 2007; Aboe *et al*., 2006a).

In S2, 85% of women listened to the radio or watched television regularly as 48% watched agricultural programs. Tan *et al*. (2004) however, reported even higher percentages (95 and 73.3%, respectively). They also reported that 36.7% of farmers read a newspaper regularly, while this ratio was established as almost zero in this current study. The fact that the data in the relevant study related to the men in the household may, to a certain extent, account for this discrepancy. A similar difference occurred relating to the membership in agricultural organizations. Those researchers reported 80% of households were members of an agricultural organization. However, we determined that 40% of households were members of an agricultural organization in S2 and in all of these households the men held the organizational memberships.

In Antalya (S2) where socio-economic structure was investigated in greater detail, 17.4% of households did not have any land and the average size of land of those who did was 21.73 decar/household (SD 25.22). Yilmaz and Yilmaz (1998) reported higher average sizes of land for both Turkey and Antalya as 57.6 and 35.2 decar/household, respectively. This situation seems to have stemmed from the inheritance legislation, which breaks agricultural land in to smaller plots over generations. The average identified small holding size is higher than that stated for Ethiopia by Halima *et al*. (2007), but lower than that reported for Zimbabwe (Muchadeyi *et al*., 2007).

The average number of income sources was 2.19 (SD = 0.88) in S1 and 1.96 (SD = 0.85) in S2. Figure 2 and 3 are slightly higher than those reported by Muchadeyi *et al*. (2007) regarding rural Zimbabwe (1.8). The average of income types was 1.93 (SD = 0.78) in P-M income villages and 2.56 (SD = 0.92) in R villages group of S1; the difference between them was statistically significant ($p<0.01$). In S2, statistically significant difference did not found between the village incomes groups for this criterion.

As understood visually from Fig. 2, a meaningful relationship was identified between village income groups

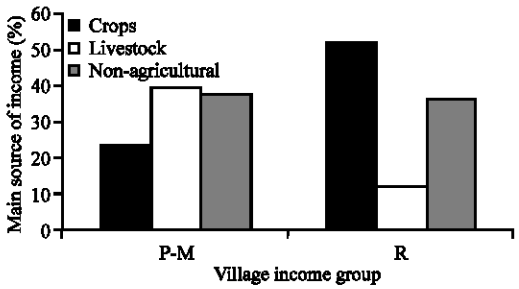

Fig. 2: Main source of income in different village income groups (S1) (P-M: Poor and Medium, R: Rich)

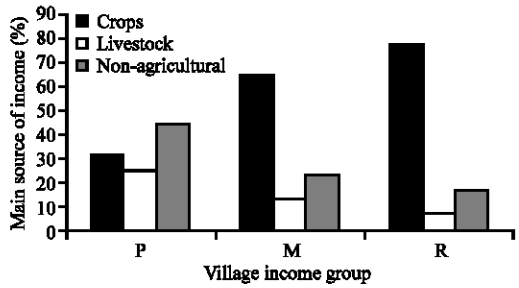

Fig. 3: Main source of income in different village income groups (S2) (P: Poor, M: Medium, R: Rich)

regarding the main source of income ($\chi^2 = 14.421$, $p<0.01$) for S1. Whilst livestock production is the main income for 12% of the R village group, it is 38.9% in P-M group. Plant production (field crops and/or horticulture crops) was the main source of income for 52.0% of the R and 23.6% of the P-M villages. In S2, a meaningful and significant relationship ($\chi^2 = 24.848$, $p<0.01$) between village income group and main source of income was also observed (Fig. 3). Muchadeyi *et al*. (2007) reported 70.8% depend on plant production as their main source of income and 17.7% on livestock. According to Aboe *et al*. (2006a) 31% depend on non-agricultural activities (trader and others) for their main income in Ghana, whereas in the current study the figures for households with non-agricultural activities as main sources of income were 36.9% in S1 and 26.8% in S2.

In S1, 62 out of 122 households (50.8%) had non-agricultural income (29% self-employed, 24% pensioners, 19% civil servants, 15% casual labourers and 13% salaried in the private sector). One hundred three out of 224 participating households (46%) had non-agricultural income in S2 (30% self-employed, 23% pensioner, 24% casual labourer, 13% civil servant and 10% salaried in private sector).

The proportion of households whose main source of income is crops in the R village group was high, whereas those whose main source of income is livestock was low ($p<0.01$ in both surveys). It is expected that farmers will

tend towards raising crops primarily in R villages where there are adequate agricultural land and irrigation facilities. Half of the surveyed population was involved in non-agricultural activities and 12.3% (S1) and 16.5% (S2) did not have an agricultural income. Also, in both regions the proportion of those who did not raise field crops-namely wheat was 40%. This figure is considered as too high since, wheat growing is the most typical indicator of farming in Turkey. Therefore, we conclude that a considerable number of households living in villages are not involved in agricultural production any more, they only reside in the village. The findings from this study indicate that the income generated by agricultural production is not sufficient for villagers. Those who cannot solely live on their agricultural income move towards non-agricultural activities. Likewise, the proportion of those who depend on non-agricultural activities for their main income is much higher in the P village group compared to the R village group ($p<0.01$) in S1.

Keeping village poultry: In various parts of Canakkale (S1) province 84.4% of the households kept VP. Similarly, this figure was 88.8% in the sample representing Antalya (S2) province. Dessie and Ogle (2001) informed >60% of the families in the central highlands of Ethiopia kept village chickens. However, Mwalusanya *et al.* (2002) reported 90% of the families in a part of Tanzania had village chickens. In the both surveys, approximately half of those who did not keep poultry during the surveys had done so in the past. The main reasons for not keeping poultry were damage caused by chickens (37% for S1, 24% for S2), diseases (16 and 20%) and lack of space (11 and 24%).

According to the surveys, it is usually the women and more often the oldest woman in the household was responsible for rearing the poultry. Whilst in only a few of the households' men were completely responsible for VP rearing, in most households men help with caring for the chickens. The finding that the women play main role for VP raising is parallel to the other countries where VP farming is common (Gueye, 2005a; Mcainsh *et al*., 2004). Sekeroglu and Aksimsek (2008) also determined poultry house cleaning activity was done mainly by women (90.3%) in Tokat province, Turkey. However, contrary to many statements (Aboe *et al*., 2006a; Kondombo *et al*., 2003; Dessie and Ogle, 2001), it is not common in the surveyed population, for children to be responsible for rearing the chicken and to actively share the tasks. Only a few households stated that their children help a little with rearing VP. The high level of school attendance in Turkey might have an impact on this.

Table 2: The relationships between VP farming and various factors (S2)

	n (%)			
S2 factors	Keep VP	Do not keep VP	χ^2	p-value
Village income group				
P	49 (86.0)	8 (14.0)	4.783	>0.05
M	115 (92.7)	9 (7.3)		
R	35 (81.4)	8 (18.6)		
Number of family				
1-4 members	99 (84.6)	18 (15.4)	4.407	<0.05
>4 members	100 (93.5)	7 (6.5)		
Variety of income				
1	55 (77.5)	16 (22.5)	13.661	<0.01
2	90 (94.7)	5 (5.3)		
3-4	54 (93.1)	4 (6.9)		
Agricultural income				
Yes	171 (91.4)	16 (8.6)	7.746	<0.01
No	28 (75.7)	9 (24.3)		
Growing field crops				
Yes	130 (96.9)	5 (3.7)	19.056	<0.01
No	69 (77.5)	20 (22.5)		
Keeping non-poultry livestock				
Yes	147 (96.1)	6 (3.9)	25.513	<0.01
No	52 (73.2)	19 (26.8)		

S2: Survey 2, VP: Village Poultry, P: Poor, M: Medium, R: Reach

In S1, 13.9% of households in the P-M income group villages did not keep VP, while this was 18.0% for households in the R villages group; however, the difference was only numerical. On the other hand, the monetary average individual income of households that kept poultry (61.11 USD/person/month, SD = 36.18) was statistically lower ($p<0.05$) than those who did not (81.09 USD/person/month, SD = 59.00). Only 9.6% of those who cultivated field crops did not keep poultry, whilst it was 24.5% in those who did not cultivate field crops, in S1 ($\chi^2 = 4.951$, $p<0.05$).

The results of the Chi-square (χ^2) analysis of the relationships between the factors discussed in S2 and keeping VP are shown in Table 2. It can be seen from the table that the proportion of households that did not keep poultry was lowest in the M income group ($p>0.05$). The occurrence of VP was higher in the following groups; larger households, having various sources of income and agricultural income, growing field crops and keeping non-poultry livestock ($p<0.05$ for first, $p<0.001$ for others, Table 2). The average land size of household that kept poultry (19.09 decars/household, SD = 24.70) was significantly ($p<0.01$) higher than those who did not (6.98 decars/household, SD = 18.03). Also, the difference between the average LU of households that kept VP (3.67, SD = 6.24) and those who did not (0.34, SD = 0.89) was at a statistically significant level ($p<0.01$). It is clear that raising field crops being part of household activity had a positive relationship with VP farming. It seems that those who live like farmers in the village are more likely to be involved in small scale poultry farming.

Eighty four percent of respondents in both S1 and S2 replied yes to the question If your income was higher and you continued to live in the village, would you continue this type of production? Some of the most striking responses to this question were a house without chickens? What would I do if I did not rear chickens in a village, go to the cinema? Why would not I rear chickens when I have wheat that I have produced myself?, the chickens could live on house crumbs even if there was not any feed to give them, snakes, mice and insects would infest the house if there was not any poultry, I would send the eggs to my children in town if I did not eat them myself. These responses are evidence that this form of production is perceived as an integral part of rural life and the sustainability of the system.

In S2, the proportion of those who replied I would continue VP production is highest in the M village income group ($\chi^2 = 6.613$, $p<0.05$). In S2, whilst 20.9% of women under the age of 40 stated they would not continue if their income were higher, this proportion is 12.3% for women over the age of 40 ($\chi^2 = 2.729$, $p = 0.073$). In the same survey, the proportion of those who would continue was higher amongst households with agricultural income ($\chi^2 = 5.709$, $p<0.05$) and households with non-poultry livestock ($\chi^2 = 3.902$, $p<0.05$).

CONCLUSION

Due to the set up of the study, it was not possible to compare the two regions precisely. However, when education levels of housewives, size of families and variety of income criteria are considered, it gives the impression that the socio-economic conditions of the respondents in the sample from Canakkale Province are slightly better than the sample representing the Antalya province. The notices of Davran *et al.* (2009) and Tan *et al.* (2004) supported the differences between our two provinces. The findings of present research confirm that village poultry farming households are involved in small scale agriculture (Muchadeyi *et al.*, 2005; Aboe *et al.*, 2006b). It can be stated that except for the education level of women, the population discussed in the study exhibits considerable similarities to the African countries, where village poultry farming is widespread. Sonaiya (2009) concluded that the extent of available knowledge concerning VP systems among the stakeholders of this subject is a primary determinant of productivity and profitability. The relatively higher education level of Turkish rural housewives will surely be a major advantage in the extension of VP knowledge and its effective transformation into production.

In the Poultry Meat Sector Final Report (Anonymous, 2006) a view is expressed that VP farming in Turkey will continue to exist especially in the East of the country. However, the findings from this present research indicate that VP farming is widely practiced in the rural parts in the West of the country, which has more prosperous rural population compared to the Eastern provinces. Despite, some methodological discrepancies between two surveys, findings show several similarities. However in Turkey, a country made up of geographically and socio-economically heterogeneous regions, the prevalence of VP farming and its meaning for families can vary according to regions. Therefore, it is important to accurately map the status of VP farming in different parts of Turkey.

To summarize, in Turkey, where commercial poultry sector is developing extremely successfully, most of the families in the rural parts of the two provinces in the more prosperous West of the country practice small scale agriculture and VP farming. Village poultry farming does not only stem from the insufficient income level but it is also regarded as part of rural life.

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