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A FIELD STUDY ON PIGEON PRODUCTION SYSTEMS IN THE RURAL SECTOR OF EL-SHARKIA GOVERNORATE, EGYPT

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ABSTRACT: One hundred rural pigeon owner in six target areas (districts) of El-Sharkia governorate were studied. The main objectives were to use system approach to characterize the existing pigeon production systems in villages and obtain reliable data on these systems in including some social aspects, management and productive performance. Pigeon farmer in rural areas were identified as those operate in a village and raise pigeon flocks either inside their houses or attached enclosures. Chi-square was used to test all differences between systems except flock size data and performance traits which allowed making ANOVA between systems.

Production systems identified were: 1) family pigeon production system and 2) commercial pigeon production system which involves two sub-systems; the mud dovecot and the wooden lofts. Family system represented about 45% of the studied farms versus 55% for the commercial system. Barri pigeon (wild) represented the higher percentage (66.83%) of the flock in the mud dovecotes system, while Remaia pigeon represented higher percentage (52.91%) of the wooden lofts system. Local pigeon (Baladi) was the most predominant breed (77.94%) in family system. About 55% of them were female under the family system, whereas 91-100% was males under the wooden lofts and mud dovecotes systems. Average flock size was 32±2.8, 83±12.9 and 344±51.8 birds in the family, wooden lofts and mud dovecotes systems, respectively. The majority of pigeon (55-81%) were come from out off-flock in all systems. The reverse trend observed for pigeon born and reared on-flock (19-37%). The mud dovecotes and wooden lofts systems are

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considered as main source of profit for the majority of farmers (88-91%). However, the objective of the farmers under the family system was home consumption and gaining profit (72%). In most of pigeon performance traits there were no significant differences between the all systems.

INTRODUCTION

Pigeon production is the dominant system in the rural regions and part of the rural farmers' life in Egypt. It has been practiced in Egypt from time immemorial. Comparing with the other poultry, pigeon able to produce at a very low cost (require less feed, caring, housing and capital investment). Moreover, it has a long productive life and a short reproduction cycle besides its high disease resistance. Because of the aforementioned advantages, pigeon is considered as a ready cash source of income during hard time and provides employment opportunities for villagers especially for poor women and educated unemployed youth. Rural poultry in general represent a significant part of the rural and national economies (Sonaiya et al., 1999 and Guèye, 2000). Although the rural sector is almost the sole source of pigeons, the exact number of the rural poultry population (including pigeon) is unknown (Hosny, 2006) and there is no published data available on number of pigeons in rural sector (MALR, 2012). A pigeon flock in rural areas may hold different local breeds of pigeon, but it is mainly kept for meat production.

To understand the multiple dimensions of livestock development, a systems approach has been advocated (Udo and Cornelissen, 1998) . The lack of understanding of the socio-economic context of the production system is a major factor in the failure of research to have an impact on poor farmers' livelihoods (Biggs, 1995). This means in practice that researchers have to explore ways to actively engage with pigeon keepers to understand how farmers' goals, perceptions and resources affect the sustainability of the production system. Village pigeon production is managed at household level therefore; development of this type of production system requires understanding of technical-biological aspects and social context, as well as their interaction (Whyte, 2002).

There is a lack of information on raising local Egyptian pigeon (Baladi) in rural sector, especially traditional dovecotes (El-Hanoun et al., 2008) and little researches have been carried out, besides pigeon production systems have been marginalized by decision-makers. Therefore, the present study was carried out to use system approach to characterize pigeon production systems in villages and obtain reliable data on these systems in El-Sharkia governorate including some social aspects, management and productive performance. The approach used for this study is sometimes termed as techno-graphic approach which seeking to describe not only the technical processes and equipment but also social relations (Richards, 2003).

MATERIAL AND METHODS

A field study was carried out on 100 randomly selected households keeping pigeon in six districts of El- Sharkia governorate in east delta region of Egypt. The number of pigeon farmers surveyed in each of these districts is shown in table1. Data were collected during the year 2012.

Data was collected through semi-structured interview with questionnaire

including 100 households from the aforementioned districts who were involved in pigeon production. A preliminary survey has been carried out to check the fitness and efficiency of the questionnaire. Pigeon farmer in rural areas were identified as those operate in a village and raise pigeon flocks either inside their houses or attached enclosures. They adopted traditional management practices of pigeon raised under rural conditions. One field research officer in each district was trained and assigned to collect data under supervision of the research team through weekly visits to the household. The collected data included information on flock size, flock composition, flock structure, breeds of pigeon, breeding purpose, source of pigeon, housing systems, feeding system, labour, constrains, demographic, social characteristics and some productive and reproductive traits.

Data collected from field study was statistically analyzed by Chi-square test of hypothesis (Snedecor and Cochran, 1993). The least squares technique using the general linear model procedure (GLM) of SAS program (SAS, 2010). A pre-test analysis of variance for data detected that there is no significant differences among districts which indicate the similarity among them as far as pigeon production is concerned, therefore the useful model to analysis was:

$Yijk = \mu + S_i + D_j + e_{ijk}$, where

Yijk is the observed traits,

μ is the general mean,

S_i is the effect due to production system, i = 1,2,3 (1=dovecotes, 2=wooden lofts and 3=family),

D_j is the effect of the j district (j= 1, 2, 3, 3, 4, 5, 6),

e_{ijk} is a random effect associated with the individual observation and assumed to be independent, random and normally distributed.

RESULTS AND DISCUSSIONS

According to objective of the pigeon owner (either for home consumption or gaining profit) and housing system (mud dovecots, wooden lofts and traditional cages), the pigeon production systems in rural area can be classified into two main systems: 1) family pigeon production system and 2) commercial pigeon production system which involves two sub-systems; the mud dovecots and the wooden lofts.

1. The family pigeon production system:

The main reason for keeping pigeon in this production system is home consumption and the surplus is being sold to achieve a better livelihood level. Villagers who cannot afford to maintain large or small ruminants can presumably maintain a few pairs of pigeon. Therefore, family system is the most predominant systems in rural areas. Village poultry are the predominant livestock species in many rural areas (El-Wardani et al., 2008 and Ahlers et al., 2009).

This system represents 45% from the whole studied farms. The pigeon shelter is a room which is being constructed either from red adobe bricks or mud bricks containing old or used material like plastic boxes (21%) or tins (60%) and even clay pots utilized as mobile nests for brooding pigeon. It is simple and cheap. About 52% of the farmers use electricity in pigeon shelters. Local pigeon breeds are preferred by the farmers and have proved to be a sustainable livelihood source for rural farmers under traditional systems of management, and it is usually family run and rarely employ outside labor.

2. The commercial pigeon production system:

The maximization of profit (money making) is actually the most important breeding objective for the pigeon owner under this system. Commercial pigeon production system represented about 55% of the studied farms. This system involves two sub-systems; the mud dovecots and the wooden lofts.

2.1. The mud dovecotes sub-system:

Pigeons were traditionally raised in a dovecote, where pigeon were allowed to fly free and this is a low maintenance way of keeping pigeons. If the farmer fed his pigeon, the birds tend to remain in the neighborhood, but they are able to find their feed within a radius of 15 km, that way making use of the different vegetation cycles of local plants. Dovecotes system is usually constructed of mud conical structure in shape. Pots and pipes are cemented together in horizontal layers with some of them opening outside of the tower and others inside. Inside the tower there is either a ladder or a stairway by means of which the owner can climb up to harvest his squabs. The Pigeon tower is maintaining the characteristics of a simple local traditional method for rearing. There is no source of electricity in this system.

This system represented about 31% of the whole studied farms. Dovecotes range from small ones holding just a few pairs (usually located on rooftops of the house), up to those that hold hundreds of pairs (in the backyard of the house). The pigeon reared under this system is utility one most of them are Barri breeds. Also most of pigeon reared under this system get their feed from scavenging. There was improvement in productive and reproductive parameters of pigeon's dovecotes due to the additional supplementation of feed in winter season (El-Hanoun et al., 2008).

2.2. The wooden lofts sub-system:

Lofts come in various shapes and sizes, lofts are usually constructed of wood or from mats attached to a wooden frame or wood and wire, containing wooden nests for incubation. They are normally located on the rooftops of the house. The loft is secured from predators, such as cats, rats, and weasels, snakes and hawks. Fancy and sporting pigeon breeds are the main dominant breeds reared under this system. This system represented about 24% of the whole studied farms. About 90% of the respondent in this system have electricity in their lofts.

Demographic characteristics of pigeon owners: The household characteristics of the respondents are presented in table 2. From the total interviewers pigeon family system farmers about 55% were female, whereas 91-100% were men under the wooden lofts and mud dovecotes sub-systems. It is expected that the level of education is related to decision making of an owner because it would contribute to their ability for efficient management in their farms. Also, it is positively affect the owners' access to useful information that may help them increase their productivity. Ndahitsa (2008) stated that level of education determines the quality of skills of farmers, their locative abilities and how well informed they are to the innovations and technologies around them. Ola-dipo and Adekunle (2010) added that individuals with higher educational attainment are usually being faster adopters of innovation.

Regarding respondents occupation 31%-48% of family and mud dovecotes sub-systems were involved in agriculture, whereas the wooden lofts system the main profession for the largest portion of them (59%) is as a trader. This illustrate that pigeon farming is a part time job and that most farmers do not depend on one

profession as the sole mean of livelihood. This result agrees with the findings of Amaza (2000) that it is common for some farm household to engage in other non farming activities to complement their earnings from farming occupation for their livelihood.

Family as a whole is the main owner of pigeon being 43% and women are more involved in activities related to the managerial practices under the family system. The present results are consistent with those of Moreki et al. (2010) in Botswana. Sloan (2011) stated that family poultry was often owned and managed by women and children for whom they represent an important source of cash income in times of need. However men are the main owner of pigeon 73% and 93% and they were the main responsible of the managerial practices for the two subsystems of the commercial system as indicated in table 2.

Flock size: The largest parent flock size and squab flock size was detected in the mud dovecotes system being 246.35 and 101.40 pair respectively with high significant differences comparable with the other two systems as shown in table 3. The same trend was observed for whole flock size. In general, socio-economic and agro-ecological factors as well as management practices have a significant influence on flock sizes owned by rural households. Larger flock sizes are likely to be found in households with better standard of living than their poorer counterparts and those with larger families (Aboe et al., 2006).

Flock structure: Concerning flock structure, the low percentage of squabs was in the mud dovecotes system (28.36%) as compared with the other two systems (37.42%) could be due to the high mortality rate of squabs which could be from predators. Around 62.07% of the owners under this system declared that their dovecotes is not protected from predators comparable to 80.95% and 90.91% (the differences were significant, $P<0.0001$) of pigeon farmers under the family and wooden lofts (their shelters are protected from predators). Pigeon are monogamist in that a pair of male and female is borne together that is two squabs per brood (Anonymous, 1984). Therefore, male female ratio is one, In agreement with the present study, the sex ratio was 1:1 in the studied sample as shown in table 4. Asaduzzaman et al. (2009) stated that male female ratio should be one. Among all the pigeons, half were male and half were female which correlates with that given ratio.

Breeds of pigeon: Data representing pigeon breeds are shown in table 5. The survey results show that Bari pigeon (wild) represented the higher percentage (66.83%) of the flock under the mud dovecotes system, while Remaia pigeon represented higher percentage (52.91%) of the wooden lofts system. Under the family system, the most predominant common pigeon breed was the local pigeon (77.94%).

Source of pigeon: Respecting sources of pigeon, it was noted that under the mud dovecotes system about 36.7% of the pigeon born and reared on farm versus about 18.5% in the wooden lofts and family systems. However, pigeons are largely coming from market or other farms (born off farm) in all systems, especially in the in the wooden lofts and family systems as shown in table 6.

Breeding objective: Respecting Breeding objective of the pigeon farmer, there were significant differences between all systems (table 7). It was noted that under the mud dovecotes and wooden lofts systems are considered as main source of profit for the majority of farmers (88-91%). However, the main objective of the farmers under the family system was home

consumption and gaining profit (72%). Therefore, pigeon keeping plays a very important role for the farmers as food supply and the surplus is being sold to increase their income. The obtained results are in agreement with those obtained in rural poultry by El-Wardani et al. (2008) and Omar et al. (2012).

Feeding system: Pigeons are grain eaters. They reared in scavenging under the mud dovecotes system and farmers give supplementary feeding during winter season (grains in 67.33% of cases and 33% seeds and grains), the supplementation frequency is once a day in 58.62% of cases. In pigeon, scavenging ability is higher than that of chicken; pigeon can look for their own feed.

Farmers in family system fed their pigeons with a mixture of seeds and grains (53%) and the remainder percent (47%) was grains. Around 62% of them gave feed three times a day by spreading the feed ingredients on the ground. While most of farmers 55% under wooden lofts give the feed twice a day and feed their pigeon a mixture of seeds and grains (81.82%) the left portion 18% was grain. Under the family system, householders use old kitchenware as feeders and drinkers. In this context, Moreki (2006) reported that several types of vessels are used as drinkers, including old metal (broken pots and lids of various containers) and plastic containers, in the family poultry production. Scavenging feeds meet up about 60-70% of the requirement of pigeon (Rahman et al., 1997) and the rest of the feed is supposed to be available in supplementary feed.

Productive and reproductive performance: Data in table 8 shows that there is no significant difference between the studied systems concerning female age at onset and male age at sexual maturity. Sturtevent and Hollander (1978) and Ghosh et al. (2013) observed that the age of maturity ranging from 6-7 months.

In regard with the female weight at onset the wooden lofts system exhibited the heights body weight (381.7g) which reflected by good feeding as compared with the family and mud dovecotes sub-systems being 360.1 and 295.3 g, respectively. The same trend was observed in male weight at sexual maturity. Bolla (2007) stated that male pigeon is larger, aggressive, heavier, and consume more feed than female. Similarly Kigir et al. (2010) found that male pigeon had more body weight than female pigeons.

The differences between the incubation periods under the all systems were not significant. Murton and Clerk (1968) and Jalal et al. (2011) showed that incubation period was 17 - 19 days. Squabs under the wooden lofts system attained the highest significant weight (330.7g) comparable with the other systems. This was in agreement with Levi (1957) reported weight of squab to be about 340.91g to 454.55g. However, Asaduzzaman et al. (2009) said that squab weight ranged from 200 to 300g with an average of 258g. The variation in weight of squab may be due to difference in breed, feeding and marketing age.

Concerning the marketing age there was a significant difference between the systems. The lowest marketing age detected under the mud dovecotes system being 31.7 day. Marketing age is varying from 25 to 35 days with an average of 30 days (Levi, 1957; Blechman, 2006 and Bolla, 2007).

In respect of number of cycles/year, there were no significant differences between the all systems. However, reproductive performance life of pigeon gave the highest values in the wooden lofts system as shown in table 8. The findings of the study concerning cycles numbers was around 7 numbers/year/pair, similar results

obtained by Asaduzzaman et al. (2009); Ghosh (2013) and Abd El-Azeem (2005). Regarding female productive life, it was in agreement with Bolla (2007) and Ghosh (2013) who reported that the productive life for male was 5 years and for female 10 years.

The high percentage of mortality was observed under the mud dovecotes system (12.66%) followed by that of the family system (10.7%). The high mortality in the dovecotes systems was due to predators attack. This percent is lower than that (14.58%) reported by Ghosh (2013), but in accordance with Asaduzzaman et al. (2009) who found 5-15%. Most of the mortality occurs from the attack of predators and disease.

The mean hatchability rate was significantly low especially in the mud dovecotes system being 80.76% whereas the highest one 90.67% was under the wooden lofts system. El- Hanoun et al. (2008) declared that hatchability percentage in the mud dovecotes for the Nile Delta region ranged from78 to 85.29%. Moreover, Darwati et al. (2010) declared that hatchability of pigeon was 77%. However, Ashraful Kabir (2013) said that hatching capacity was 98.92±1.04% for crossed indigenous pigeon in semi intensive rearing.

CONCLUSION

Family pigeon production system is the prevalent system and the most predominant pigeon breed was Baladi pigeon (local), whereas under the commercial system it was Barri (wild) and Remaia pigeons. Pigeon farming in rural areas is not well organized however, it plays an important role in the livelihoods of rural poor people, (economically, nutritionally and socio- culturally). Poor and unemployed youth are involved in pigeon farming where, they see it as a good opportunity for generating income. Therefore, pigeon farming may be considered as a profitable business if it is run in a proper way.

Table (1): Number of pigeon farmers surveyed at different districts.

Districts	Farmers
Zagazeg	20
Menia -Elkamh	15
El-kenayat	15
Kafr-Shokr	15
Pelpeis	20
Abohamad	15

Table (2): Social characteristics of pigeon farmer under the common production systems.

Items	Family system		Commercial system			
			Mud dovecotes		Wooden lofts	
	(%)	N	(%)	N	(%)	N
Gender						
Male	45.24	19	100	29	90.91	20
Female	54.76	23	0.00	0	9.09	2
Education level						
University degree	23.81	10	31.03	9	31.82	7
High school degree	33.33	14	31.03	9	36.36	8
Read and write	42.86	18	37.93	11	31.82	7
Occupation						
Trader	21.43	9	27.59	8	59.09	13
Employee	19.05	8	6.9	2	22.73	5
Retired	2.38	1	17.24	5	18.18	4
Farmer	30.95	13	48.28	14	0.00	0
House keeper	26.19	11	0.00	0	0.00	0
Flock ownership						
Man	38.1	16	93.1	27	72.73	16
Woman	11.9	5	6.9	2	9.09	2
Family	42.86	18	0.00	0	18.18	4
Children	7.14	3	0.00	0	0.00	0
Managerial practices responsibility						
Man	16.67	7	82.76	24	59.09	13
Woman	42.86	18	17.24	5	22.73	5
Family	21.43	9	0.00	0	18.18	4
Children	19.05	8	0.00	0	0.00	0

Differences between systems for gender are significant ($\chi 2$ =30.8140, P = 0.0001)

Differences between systems for education level are not significant ($\chi 2$ =1.0417, P = 0.9034)

Differences between systems for occupation are significant ($\chi 2$ =37.4808, P = 0.0001)

Differences between systems flock ownership are significant ($\chi 2$ =26.3565, P = 0.0002)

Differences between systems for managerial practices responsibility are significant ($\chi 2$ =36.6576, P = 0.0001)

Table (3): Average flock size (Least square mean ± standard error) of pigeon under the common production systems.

Item	Family system	Commercial system	
		Mud Dovecotes	Wooden lofts
Parent flock size (pairs)	19.90±1.72[b]	246.35±35.75[a]	51.76±7.89[b]
Squab flock size (pairs)	12.95±1.37[b]	101.40±24.97[a]	30.95±5.84[b]
Whole Flock size (pairs)	31.62±2.87[b]	343.85±51.78[a]	82.71±12.93[b]

Means with different letters within the same row are significantly different (P<0.0001).

Table (4): Pigeon flock structure under the common production systems.

Item	Family system		Commercial system			
			Mud Dovecotes		Wooden lofts	
	NO	(%)	NO	(%)	NO	(%)
Mature female	836	31.48	6405	35.82	1087	31.29
Mature male	836	31.48	6405	35.82	1087	31.29
Squab	984	37.04	5070	28.36	1300	37.42
Whole Flock	2656	100	17880	100	3474	100

Differences between systems for gender are significant ($\chi 2$ =87.4179, P<0.0001).

Table (5): Pigeon breeds under the common production systems.

Breeds	Family system		Commercial system			
			Mud Dovecotes		Wooden lofts	
	NO	(%)	NO	(%)	NO	(%)
Baladi (Local)	2070	77.94	2380	13.31	206	5.93
Barii (Wild)	60	2.26	11950	66.83	0	0.00
Rommi	82	3.09	0	0.00	52	1.5
Romani	10	0.38	0	0.00	0	0.00
Malty	40	1.51	0	0.00	0	0.00
King	10	0.38	0	0.00	0	0.00
Mixed	154	5.79	3550	19.85	0	0.00
Zagel	0	0.00	0	0.00	664	19.11
Remaia	0	0.00	0	0.00	1838	52.91
Australy	132	4.97	0	0.00	156	4.49
keshk	0	0.00	0	0.00	72	2.07
swafi	0	0.00	0	0.00	50	1.44
Abssi	0	0.00	0	0.00	20	0.58
Keresly	0	0.00	0	0.00	194	5.58
Wazar	0	0.00	0	0.00	88	2.53
Halaby	0	0.00	0	0.00	32	0.92
Arbak	0	0.00	0	0.00	56	1.61
HAzaz	0	0.00	0	0.00	46	1.33
Shaklabaz	20	0.75	0	0.00	0	0.00
Ekreshawy	78	2.93	0	0.00	0	0.00
Total	2656	100	17880	100	3474	100

Difference between pigeon breeds are significant ($\chi 2$ =74.63, P=0.0001)

Table (6): Pigeon sources under the common production system.

Sources of pigeon		Family system		Commercial system			
				Mud Dovecotes		Wooden lofts	
		NO	(%)	NO	(%)	NO	(%)
On flock		8	18.6	11	36.7	5	18.52
Off flock	Market	19	44.19	5	16.7	16	59.26
	Other farms	16	37.21	14	46.7	6	22.22

Difference between systems source of pigeon are significant ($\chi 2$ =64.63, P=0.0008)

Table (7): Breeding objective under the common production systems.

Item	Family system		Commercial system			
			Mud Dovecotes		Wooden lofts	
	NO	(%)	NO	(%)	NO	(%)
Home consumption	7	18	0	0.00	0	0.00
Home consumption + profit	29	72	3	12	2	9
Profit	4	10	22	88	20	91

Differences between breeding objectives of pigeon are significant ($\chi 2$ =43.63, P<0.0001)

Table (8): Performance traits (Mean ± SE) under the common production systems.

Performance items	Family production system	Commercial production system	
		Mud dovecotes	Wooden lofts
Female age at onset (months)	5.75±0.09	5.79±0.09	5.84±0.13
Male age at sexual maturity (months)	5.56±0.09	5.67±0.18	5.62±0.11
Female weight at onset (g)	360.1±7.37^{a}	295.3±6.7^{b}	381.7±11.7^{a}
Male weight at sexual maturity (g)	396.3±0.72^{a}	326.9±10.67^{b}	403.3±14.61^{a}
Incubation period in days	17.38±0.15	17.62±0.14	17.67±0.19
Squab weight (g)	316.4±11.05^{a}	243.1±7.51^{b}	330.7±10.05^{a}
Squab marketing age (day)	33.1±0.69^{ab}	31.7±0.74^{b}	35.0±0.77^{a}
Number of cycles/year	7.17±0.16	6.69±0.20	7.07±0.16
Female productive life (months)	98±6.01	94±5.27	104±6.7
Squab mortality (%)	10.07±1.34^{ab}	12.66±1.5^{a}	7.84±1.96^{b}
Hatchability (%)	86.43±1.17^{ab}	80.76±3.27^{b}	90.67±1.18^{a}

Means in the same row having different letters are significantly different (P<0.01).

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الملخص العربى

دراسة حقلية على نظم إنتاج الحمام في القطاع الريفي بمحافظة الشرقية – مصر

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اجريت دراسة حقلية على عدد ١٠٠ مربى للحمام الريفى فى عدد (٦) مراكز بمحافظة الشرقية وكان الهدف من الرئيسى من هذه الدراسة استخدام مفهوم النظم لتوصيف نظم انتاج الحمام القروية والحصول على بيانات دقيقة على هذه النظم الانتاجية.

اشتملت هذه البيانات على بعض المفاهيم الاجتماعية والعائية والاداء الانتاجى للحمام فى مناطق الدراسة. وتم تعريف مربى الحمام الريفى فى هذه الدراسة بانه المربى الذى يعمل داخل القرية ويحتفظ بقطيع الحمام داخل المنزل او بجوار المنزل . اجرى تحليل مربع كاى للبيانات لاختبار الفروق بين الانظمة فيما عدا حجم القطيع والصفات الانتاجية حيث استخدمت البيانات المتعلقة بهما لاجراء تحليل التباين بين الانظمة. .

امكن تميز نظامين رئيسيين لانتاج الحمام الريفى : ١) نظام انتاج الحمام المنزلى ٢) نظام انتاج الحمام التجارى ويتدرج تحت هذا النظام التجارى نظامان فرعيان هما نظام الابراج الطينية ونظام الخشب البغدادلى.

شكل نظام الانتاج المنزلى للحمام حوالى ٤٥ % من المزارع المدروسة مقابل ٥٥ % للنظام التجارى. مثل الحمام البرى ٦٦،٨ % من اجمالى قطيع الحمام فى نظام الابراج الطينية ، بينما حمام الرماية شكل ٥٢،٩ % من اجمالى قطيع الحمام فى نظام الخشب البغدادلى. وكان الحمام المحلى (البلدى) اكثر الانواع السائدة (٧٧،٩%) فى نظام التربية المنزلية . حوالى ٥٥ % من المربيين فى النظام المنزلى كانوا نساء بينما ٩١-١٠٠ % من المربيين كانوا رجالا فى نظامى الابراج الطينية والخشب البغدادلى.

بلغ متوسط حجم القطيع ٣٢ و ٨٣ و ٣٤٤ طائر فى النظام المنزلى والخشب البغدادلى والابراج الطينية على التوالى . كان معظم الحمام (٥٥ – ٨١%) مشتراه من خارج القطيع فى كافة الانظمة الانتاجية بينما كان ١٩-٣٧% من الحمام المربى من داخل القطيع.

يعتبر نظام الابراج الطينية والخشب البغدادلى المصدر الرئيسى لدخل المربى فى ٨٨-٩١% من الحالات المدروسة بينما كان الهدف الرئيسى للمربى من تربية الحمام فى النظام المنزلى للاستهلاك العائلى والحصول على الربح من بيع الزائد عن الحاجة فى ٧٢% من الحالات المدروسة.

فى معظم الصفات الانتاجية للحمام لم تكن هناك فروق معنوية بين الانظمة الانتاجية المدروسة.