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A DESCRIPTIVE STUDY OF THE CHARACTERISTICS AND SYSTEMS OF GEESE PRODUCTION IN SOHAG GOVERNORATE

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ABSTRACT : The objective of this study was to describe the existing geese production systems. Identify strengths (S), weaknesses (W), opportunities (O), and threats (T) of geese production system in rural area. A cross sectional and longitudinal data collection was performed in four districts; in each district three villages were chosen. The total number of sample was 164 geese owners. Using random sampling method, data was collected using semi-structured questionnaire and interview. The main production system of geese production is the family system. According to the housing style of geese, it involves three subsystems: 1) Non-mixed 2) semi-mixed 3) mixed. The majority of householders (65.71%, 77.4 % and 79.10 %) were illiterates within the age group of 31-59 years (middle aged group). The flock size significantly varied being 9.83 ± 1.16 in the non –mixed, 5.58 ± .87 in the semi-mixed and 8.76± .84 for the mixed sub-system. The monthly income and the experience level have a positive impact on the flock size. The main feed ingredient was green forage and leftovers, adding grains or commercial ration was on occasional basis and was linked with the financial ability of the householders. The most frequently given feed consisted mostly of green forages, leftovers and grain under the non-mixed (40.0%), semi-mixed (54.84 %), and mixed (44.78 %) subsystems. Disease occurrence was higher in the mixed (52.24%) and semi-mixed (41.94%) as compared to the non-mixed (28.57%) subsystem. The non-mixed subsystem exhibited the highest insignificantly hatchability percentage (63.42%) as compared to the semi-mixed (56.24 %) and mixed (60.60%) subsystems. Most of the respondents were practice candling under the non-mixed (74.29%), semi-mixed (62.90%), and mixed (65.67%) subsystems. The village market constitutes the biggest outlet for geese selling for the non-mixed (54.29%), semi-mixed (59.68%) and mixed (62.69%) subsystems. The foremost problems were the spread of diseases, the high prices of feed for the mixed and non-mixed subsystems respectively, while it was low productivity and high prices of feedstuffs for the non-mixed subsystem. Therefore, any improvements in these constraints; appropriate interventions on management, disease awareness and control; illiteracy eradication and training may lead to sustainable increase in geese productivity in the study area.

Key words: geese, production systems, sowt analysis

INTRODUCTION

Sohag is the second poorest governorate in Upper Egypt. The prevalence of income poverty is critically high in Assuit (69.5 %), Sohag (58.6 %) and Aswan (54.4 %) (WFP, 2013). Although the population of Sohag governorate represents about 5.26% of the total Egyptian population, only 1.8% of the capital investment is spent in industry. This reflects the rather underdeveloped economy in the governorate as well as the importance of agriculture, animal and poultry production as compared with other governorates in Egypt. Therefore, agriculture is the principal form of income for not less than 65.8% of the population (MSEA, 1997).

Villagers in rural areas subsist mainly on the products of their own farms. Scarcity of cash money obliges them to use species that are cheap and easy to maintain. Geese are particularly suitable in these circumstances. Romanov (1999); Veeramani and Karthickeyan, (2009), stated that geese are among the fastest -growing avian species. Frrell (2004) found that at 4 weeks of age, they reach 40% of their adult weight as compared with 15% for meat chickens and 5% for turkeys. Village poultry plays an important role in increasing income hence, make a significant contribution to poverty alleviation (Alders et al., 2009; Bell, 2009).

Geese production system is a multifaceted system since it does not include only biological elements, but also social and economic ones. Therefore, system thinking appeared to deal with such complexity (Maani & Cavana, 2007).Characterization is the first step to know threats and opportunities for comprehensive improvement of a production system as stated by (Mtileni et al. 2009).

Geese rearing in Egypt is dominating by smallholders. Therefore, the improvement of the smallholder geese is the key to develop geese production in rural areas. However, it continues to be ignored, therefore, the present study was performed to use system approach for characterizing geese production systems and obtain reliable data on these systems. Identify strengths (S), weaknesses (W), opportunities (O), and threats (T) of geese production system in rural area. Improving the knowledge concerning geese will improve efforts toward an efficient use of geese, its development, and conservation. Furthermore this study sought to stimulate further in-depth studies regarding this important animal genetic resource.

MATERIAL AND METHODS

Survey preparation and technique

The target residents were the villagers who raise geese. Informal discussions as well as formal surveys were performed, in order to develop a rapid understanding of the farmer's circumstances, practices and constraints. The formal surveys depended on the administration of precisely designed questionnaire, providing standardized and quantifiable data that can be easily analyzed statistically (Chikura, 1999).

Qualitative and quantitative approaches were used (Mixed-methods approach). The qualitative research attributed to the meanings, notions, characteristics, and explanation of things (Berg 2007).Mixed-methods approaches were pertinent to the systems thinking (Walker et al. 1999; König et al. 2012).

Sample size

A cross-sectional and longitudinal random survey of 164 households who raise geese and are willing to participate in the present survey was performed through semi-structured interviews with Questionnaires. The sample was collected from four districts, in each district three villages were chosen, as shown in Table

1.The selected districts from the governorate were distant from each other in order to insure adequate geographical coverage of the governorate.

Data collection and analysis

The respondents, were asked to evaluate the different problems facing geese raising and production based on its severity in the following three categories 1 (the least important) 2 (medium important) and 3 (the most important).The final rank order of the problems was done based on the total weighed score of each problem. The total score was calculated by the formula, followed by Mozumdar et al., (2009) and Alam et al., (2012).Bivariate analysis was used to detect relationships between independent and dependent variables. This comparison test is more appropriate for categorical data (Cohen et al. 2007). The General Linear Model (GLM) of SAS program (SAS, 2010) was used to analyze the variation of numerical parameters.

RESULTS AND DISCUSSIONS

The main production system of geese production is the family system (extensive system). According to the housing style of geese, the family system of geese production involves three subsystems: 1) Non-mixed 2) semi-mixed 3) mixed

Family geese production system

This system requires minimal level of finance, care and attention. Around 94.51%ofgeese owners were females from them about (85.37 %) were in middle age. The majority of them (75.61%) were illiterate. Farming represents the main source of income in the surveyed sample being 34.76%. About 59.15% of the respondents get a monthly income lower than LE 2000.

Non-mixed family geese production subsystem

Under this subsystem geese were reared alone, without mixing with other birds or animals and they are partly confined. This subsystem represented 21.34% of the total respondents surveyed. About 57.14 % of the respondents do not depend on geese rearing as a source of income.

Semi-mixed family geese production sub-system

This sub-system represented 37.81% of the total sample. Raising geese is associated with other poultry. About 56.45 % of the respondents depend on geese selling income in their livelihood.

Mixed family geese production subsystem

A mixed sub-system, where geese are raised with poultry and animals. It represented 40.85% of the total sample. Around 60 % of the respondents do not depend on geese raising as a source of income.

Social characteristics of geese owners

As shown in Fig. 1, the majority of householders (82.86%, 87.1% and 85.1%) were in the age group of 31-59 years (middle aged group) under the non-mixed, semi-mixed and mixed subsystems, respectively. According to FAO (1997)they belong to an economically energetic population group which in the age of 25-59 years old. Our results are similar to those of Muchadeyi et al., (2007) and Pandian et al., (2009). Moreda et al., (2013).The farmers are considered as low adopters of technical packages and its dissemination it. Due to the high illiteracy level as indicated in Fig. 2 {the majority of householders (65.71%, 77.4 % and 79.10 %) were illiterates} which will hinder them to intellectualize information and make the right economical decision. In this context, Ola-dipo and Adekunle (2010),declared that individuals with higher educational achievement are usually being faster adopters of innovation.

Flock size

Concerning the whole flock size mean our results clearly showed that there was a significant difference (P<0. 0.05) between the studied subsystems of family system. The overall geese flock size varied widely ranging from 1 to 36 with an average of 9.83 ± 1.16 in the non – mixed, and from 1 to 22 with an average of 5.58 ± .87 in the semi-mixed and from 2 to 40 with an average 8.76± .84 for the mixed sub-system as indicated in table 2. The present finding is consistent with the study of Omar et al. (2012).

Determinants of flock size

The regression estimates of flock size determinants presented in Table 3. We analyze the determinants of flock size among the geese owners. The flock size was modeled as a function of the family size, income, and experience years of the respondents. The R^2 of the function was 0.154. This indicates that the explanatory variables explained 15.4 % of the variation in the flock size. The results showed that a 1% increase in monthly income will increase the flock size by 0.002%, and a 1% increase in the experience level will increase the flock size by 0.14% (Table 3). This demonstrated that the monthly income and the experience level have a positive impact on the flock size. The interpretation for this may be due to the fact that the respondents would have more money to invest in geese production. The experience of the respondents increase their knowledge and could lead to efficient resources management, consequently the production will improved. These results are in good agreement with those reported by Babatunde et al., (2015).

Feeding pattern of village geese

As indicated in Table 4, under the non-mixed subsystem feeding on available ingredients only represented the largest percentage being 62.86 %, while it amounted 43.55 % and 52.24% under the semi-mixed and mixed subsystems, respectively. Feeding on purchased ingredients plus available ingredients was higher in the semi-mixed (56.45%) and mixed (47.76%) subsystems as compared to the non-mixed (37.14%) subsystem.

Generally speaking there were five feed ingredients which were green forage (either clover or green corn stalks or crop residues), leftovers (bread and rice), wheat bran, grains (either corn or wheat or sorghum), and finally commercial feed. The main component was green forage and leftovers, and the householders mixed usually leftovers with wheat bran if the wheat bran was available. Adding grains or commercial ration was on occasional basis and was linked with the financial ability of the householders. It is worthy to mention that most of these components which were used by the households were locally harvested and given to geese. In case of using old dry bread, the household soaked the bread and wheat bran in an old kitchenware before using it. The supplementary feed, most frequently given consisted mostly of green forages, leftovers and grain under the non-mixed (40.0%), semi-mixed (54.84 %), and mixed (44.78 %) subsystems as shown in Table 4.

Diseases occurrence

A low percentage of the respondents (28.57%) in the non-mixed subsystem reported that they experienced the problems of geese disease versus a little bit higher percentage under the semi-mixed and mixed subsystems, being 41.94% and 52.24%, respectively (Table 5).Hence, the semi-mixed and mixed subsystems suffer from a higher percentage of disease occurrence as compared with the non-mixed subsystem the interpretation of this

may be attributed to the presence and raising different species and ages together. The highest percentage of the respondents (65.67%) under the mixed subsystem simply replied that they throw the dead goose in the street as compared to 48.57% and 48.39% under the non-mixed and mixed subsystems, respectively as indicated in Table 5.

Broodiness strategy

All respondents (100%) confirmed that they used broody hens for acquiring goslings in the study area. The same trend was observed in other studies by Mulugeta and Tebkew (2013), Shishay et al., (2014), and Feleke (2015) who observed that all respondents entirely depend on the use of broody hens for incubation; the practice of artificial incubation is uncommon.

The respondents were asked about the sort of bedding materials for the broody hen nest. They replied that they use Deims, straw, and feathers. The Deims is a mixture of animal dung and chopped straw. The majority of respondents mainly used Deims being 54.29%, 54.84%, and 64.18% under the non-mixed, semi-mixed, and mixed subsystems respectively as indicated in Table 6.

Candling is very useful during incubation, and by this way the farmers can decide whether the embryo is developing or not as it helps to identify infertile eggs and dead embryos. Eggs with dead embryos and infertile ones have to be taken away instantly. Because of candling is very helpful, it seems that most of respondents do candling under the non-mixed (74.29%), semi-mixed (62.90%), and mixed (65.67%) subsystems as shown in Table 6.

Caring for goslings hatched under a broody hen is accomplished by two ways, either kept with their mother or transferred by farmer to a separate place (incubated artificially). It was obvious that the largest percentage of farmers (80.60%) under the mixed system kept the hatched goslings with the broody hen as compared to those under the non-mixed (65.71%) and semi-mixed (64.52%) subsystems. The results are in good agreement with a previous result of Feleke (2015), who reported that brooding chicks after hatching is mainly accomplished by the broody hen (86%), followed by provision of special chick brooder (13%).

The geese produce eggs on seasonal basis, for a prolonged period unlike chickens which produce a high rate in the first year of production and afterwards it declined, that is why they are only kept for a one laying year while geese kept for a long period. The obtained results clearly showed that most of the respondents under the non-mixed (51.43%), semi-mixed (54.84%) and mixed (46.27%) subsystems declared that the productive period of the goose ranged from 5 up to 10 years (table 6).

Regarding the hatchability, the non-mixed subsystem exhibited the highest insignificantly hatchability percentage (63.42%) as compared to the semi-mixed (56.24 %) and mixed (60.60%) subsystem as shown in figure 2.The achieved results are within the percentage range obtained by Omar et al. (2012) who found that the hatchability percentage was 64.25% and 63.00% under the traditional and untraditional subsystem respectively.

Marketing

Marketing of geese is not well defined. Geese are sold to meet unexpected expenditures of family needs. Analysis of family geese marketing system will help to define its economic value and importance, since there are no studies done to illustrate the market trends. Branckaert and Guèye (1999) reported that an established market

structure for free-range poultry is a prerequisite for developing the family poultry.

The farmers were asked the following question. Does geese production, secure an income for you? The answer of the highest percentage (56.45%) of farmers under the semi-mixed subsystem was confirmed by yes, while the answer was no for most of farmers under the non-mixed and mixed subsystem being 57.14% and 59.50%, respectively as indicated in Table 7.

There are three types of sale points in the study area. Most farmers under the non-mixed (54.29%), semi-mixed (59.68%) and mixed (62.69%) subsystems, sell their geese in the same village where they live (within their vicinity). So, the village market constitutes the biggest outlet for geese. The interpretation for this may be due to the small number of geese that the farmers want to sell as well as to the long distance, the inadequate means of transportation and its high cost to urban and peri-urban markets where the demand is high. Therefore, the improvement of transportation and road condition could increase market access and lead to better prices for geese owners. Abbott and Makeham, (1990), reported that inadequate transport facilities and lack of market information can explain the reduced market access and prices for households in the remoter villages. The results of Mailu & Wachira, (2010); Aila et al. (2012) and Ndathi et al. (2012) indicated that the householders sold their products either directly to the local markets or to the primary collectors (middle men).

Concerning the selling pattern, most of the householders (53.33%) under the non-mixed subsystem sell their geese directly to the consumer. whereas, those under the semi-mixed (45.71%) and mixed (55.56%) subsystems sell to the merchant (table 7). The obtained prices were higher when the selling directly to the consumer than that obtained from merchant. Dinka et al (2010) found that women and children in most villages in Ethiopia take chicken and eggs to the local market and sell it to traders or directly to consumers.

The problems confronting the householders under family geese production system.

The geese production system suffered from many difficulties. Identifying these problems in the study area will be the first step for geese production system improvement. There are many constraints facing smallholder poultry production system such as limited feed supply,lack of stock, diseases, and market constraints(Guèye, 2003; Riise et al., 2005; Badubi et al., 2006)

It was obvious that the low productivity (1^{st}) and high prices of feedstuffs and low hatchability (2^{nd}) were the main problems facing the householders under the non-mixed subsystem. Under the semi-mixed subsystem, high prices of feed ranked as the first problem facing the households, followed by diseases (2^{nd} problem)as indicated in Table 8. Under this subsystem geese owners have a very limited financial resources and their monthly income was lower than those of the other two subsystems. Sometimes they are unwilling to buy commercial feed in that case they depend on the crop residuals and table leftovers. The achieved results are in agreement with those reported by El-Wardani et al., (2008). Regarding, the mixed subsystem, it was found that the foremost problem, faced by the farmers was the spread of diseases (1^{st}) and the incidence of high

mortality. The interpretation for this may be attributed to rearing different species of poultry together with other animals. The second important problem was low productivity (2^{nd}). As the geese were infected by diseases, their weight and productivity decrease pronouncedly and sometimes they die as shown in Table 8. The present study indicated that the family system is the only system for raising geese. It is a survival system and the marvelous thing is its ability to have a tangible impact on the livelihood of poor villagers. Most of the respondents depend on available local ingredients such as green forage and leftovers. Adding grains or commercial ration was on occasional basis and was linked with the financial ability of the householders. The respondents appear to lack understanding of the risks of disease transmission kinked with the wrong disposal of mortality. The semi-mixed and mixed subsystems suffer from a higher percentage of disease occurrence compared with the non-mixed subsystem. The village market constitutes the biggest outlet for geese. Despite the importance of geese, they are raised under many constraints, such as diseases, high price of feed and low productivity. To improve, the production of geese these constraints must be tackled holistically. It is expected, that this study, will motivate further studies and improve efforts toward the efficient use, development and conservation of geese.

RECOMMENDATION

In order to improve the family geese production system the following recommendations are considered essential.

1. Training of good management, efficient use of available feed and feeding, marketing and entrepreneurship for villagers would help improve the productivity of geese.
2. People should be motivated to be engage in geese rearing.
3. Villagers want organized marketing trajectories to aid them obtain the best value from geese selling.
4. Lack of education, access to information is some of the factors which hinder the production of geese.

The SOWT analysis of geese production in Sohag governorate.

STRENGTH

- High growth rate for gosling.
- Assist in waste disposal system by transforming leftover of human foods and insects into delicious meat.
- Fed on roughages, because it's high capability to digest components of fiber, especially hemicellulose.
- Are more adapted to unfavorable climatic conditions.
- Is easier to manage than chickens and require less attention.
- Require the lowest capital investment.
- High nutritional value of geese meat because it's optimal composition of essential amino acids and fatty acids.
- Low environmental impact.
- High resistance to diseases as compared to chickens.
- Because it's large size, vulnerability to attack by predators decreased.

WEAKNESS

- Low or absent of biosecurity.
- Seasonal productivity.
- Low performance.
- Lack of sensitization, of the multifaceted potential of geese.
- Processing of geese is more complicated than processing chickens so adding value will not be easy.
- Lack of suitable credit and equipment to improve productivity.
- Lack of policy initiative to give attention to develop family geese production system, and transfer it into a market oriented entity for generating income.

OPPORTUNITIES

- Can be an income generating opportunity and source of gifts.
- Guaranteeing food security for poor villagers.
- Maximizing productivity to benefit from the economics of large scale production.
- Consumers prefer local geese meat because it is free from hormones and medicines residues.
- Empowering women because they are the main responsible for this sort of production.
- Increasing productivity will lead to a win-win situation for all the stakeholders.

THREATS

- Limited land area and high selling price of clover and green forages.
- No genetic selective breeding has occurred with geese so, it is expected that it's breeding value and characteristics will decrease.
- An outbreak of avian influenza.
- No governmental health program for smallholders especially for vaccination.

Table (1): Estimated numbers of the householders involved in the study area.

Districts	Villages	Farmers
Tima	Azbet Alkawea	14
	Kom Abo Ghareib	14
	Meshta	13
Sohag	Gezert Shandwel	14
	Arabet Abo El-Dhab	14
	Elkawamel	13
Dar El-Salam	Dar El-Salam	14.
	Awlad Yhya	14
	Azbet Borham	13
Giarga	El-Magabra	14
	Mazata	14
	El-khlafeia	13

Table (2): Average flock size (Least square mean ± standard error) of geese under the different subsystems of family system.

Items	Family geese production system			P value
	Non-mixed	Semi-mixed	Mixed	
Female goose	1.77±.016	1.60±0.12	1.87±0.11	0.2911
Gander	0.91 ± 0.07^{b}	0.84 ± 0.05^{c}	1.04 ± 0.05^{a}	0.0258
Grower	3.23±0.78	1.81±0.58	3.04±0.56	0.2162
Gosling	$3.91\pm.073^{a}$	1.34 ± 0.55^{c}	2.81 ± 0.53^{b}	0.0170
Whole Flock size	9.83 ± 1.16^{a}	5.58 ± 0.87^{c}	8.76 ± 0.84^{b}	0.0054

Values, within a row, with different superscripts differ significantly

Table (3): Regression estimates of flock size determinants

variables	coefficient	t – value
Family size	-0.126	0.641
Income	0.002***	3.451
Experience	0.144***	3.469
Constant	1.897	1.316
R^2	0.154	
F -value	9.745	

The dependent variable is the flock size

Table (4): Types of feed combinations given to geese under the different subsystems of family system.

Items	Family geese production system							
	Non-mixed		Semi-mixed		Mixed		Overall	
	N	%	N	%	N	%	N	%
Green forage, leftovers and grains	14	40.00	34	54.84	30	44.78	78	47.56
Green forage, leftovers, bran and grains	10	28.58	15	24.19	19	38.36	44	26.83
Green forage, leftovers, grain, and commercial diet	4	11.42	6	9.68	7	10.45	17	10.37
Green forage and grains	4	11.43	3	4.84	4	5.97	11	6.71
Green forage, leftovers , bran, grains, and commercial diet	3	8.570	4	6.45	7	10.44	14	8.54

Difference between subsystems for feed combinations was not significant (χ^2=3.69, P = .8841)

Table(5): Disease occurrence and prophylactic regimen under the different subsystems of family system

Items	Family production system							
	Non-mixed		Semi-mixed		Mixed		Overall	
	N	%	N	%	N	%	N	%
Have there been any disease in your flock?								
Yes	10	28.57	26	41.94	35	52.24	71	43.29
No	25	71.43	36	58.06	32	47.76	93	56.71
Disposal of dead goose								
Throw in street	17	48.57	30	48.39	44	65.67	91	55.49
Throw in trash	12	34.29	14	22.58	7	10.45	33	20.12
Throw in canal	5	14.29	10	16.13	13	19.40	28	17.07
Buried	1	2.86	8	12.90	3	4.48	12	7.32

Table (6): Broodiness strategy under the different subsystems of family system

Items	**Family geese production system**							
	Non-mixed		**Semi-mixed**		**Mixed**		**Overall**	
	N	%	N	%	N	%	N	%
laying period								
<5	9	25.71	14	22.58	20	29.85	43	26.22
5:10	18	51.43	34	54.84	31	46.27	83	50.61
>10	8	22.86	14	22.58	16	23.88	38	23.17
Litter type for broody hen								
Deims**	19	54.29	34	54.84	43	64.18	96	58.54
Straw	10	28.57	16	25.81	17	25.37	43	26.22
Feather	6	17.14	12	19.35	7	10.45	25	15.24
Egg candling								
No	9	25.71	23	37.10	23	34.33	55	33.54
Yes	26	74.29	39	62.90	44	65.67	109	66.46
Caring for goslings								
Kept with their mother	23	65.71	40	64.52	54	80.60	117	71.34
Separated from the hen	12	34.29	22	35.48	13	19.40	47	28.66

** Deims is a mixture of animals dung and chopped straw

Differences between subsystems for laying period was not significant ($\chi2=1.15$, P = 0.8859)

Differences between subsystems for litter type was not significant ($\chi2=2.49$, P = 0.6456)

Differences between subsystems for egg candling was not significant ($\chi2=1.33$, P = 0.5137)

Differences between subsystems for Caring for goslings was not significant ($\chi2=4.76$, P = 0.0925)

Table (7): Marketing properties of geese under the different subsystems of family system

Items	**Family production system**						**Overall**	
	Non-mixed		**Semi-mixed**		**Mixed**			
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Does geese production secure an income for you?								
Yes	15	42.86	35	56.45	27	40.30	77	46.95
No	20	57.14	27	43.55	40	59.70	87	53.05
Point of sale								
Same village	19	54.29	37	59.68	42	62.69	98	59.76
Neighboring village	4	11.43	3	4.84	7	10.45	14	8.54
District	12	34.29	22	35.48	18	26.87	52	31.71
Selling pattern								
Consumer	8	53.33	14	40.00	10	37.04	32	41.56
Merchant	5	33.33	16	45.71	15	55.56	36	46.75
Relatives	2	13.33	5	14.29	2	7.41	9	11.69

Differences between subsystems income from selling geese was not significant ($\chi2=3.67$, P = 0.1594)

Differences between subsystems for point of sale was not significant ($\chi2=2.74$, P = 0.6019)

Differences between subsystems for selling pattern was not significant ($\chi2=$, P = 0.)

Table (8): Problems confronting by households in geese rearing under the different subsystems of family system.

Problem	Family geese production system														
	Non-mixed					Semi-mixed					Mixed				
	Severity			Score	Rank	Severity			Score	Rank	Severity			Score	Rank
	H	M	L			H	M	L			H	M	L		
Diseases	21	6	2	29	3rd	57	10	1	68	2nd	81	8	1	90	1st
Low hatchability	24	8	0	32	2nd	45	16	4	65	4th	42	16	6	64	3rd
Low productivity	33	14	4	51	1st	24	26	10	60	5 th	36	40	7	83	2nd
Insufficient place	12	10	0	22	4th	27	26	14	67	3rd	21	20	3	44	5 th
High price of feed	9	16	7	32	2nd	30	38	15	83	1st	15	22	13	50	4th

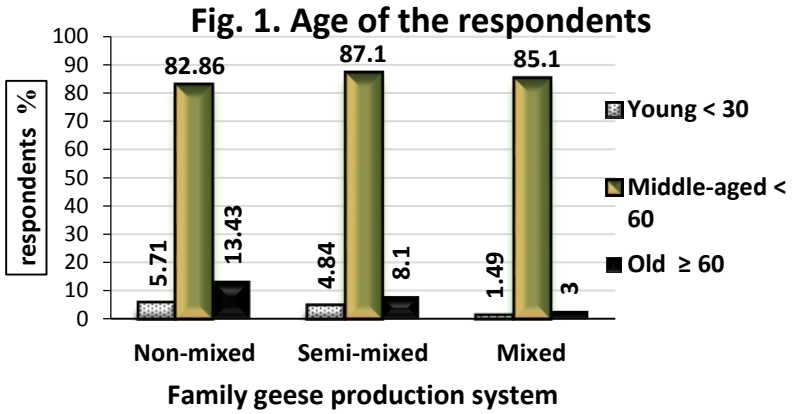


Fig. 1. Age of the respondents
respondents %
100
90
80
70
60
50
40
30
20
10
0
82.86
87.1
85.1
5.71
13.43
4.84
8.1
1.49
3
Young < 30
Middle-aged < 60
Old ≥ 60
Non-mixed
Semi-mixed
Mixed
Family geese production system

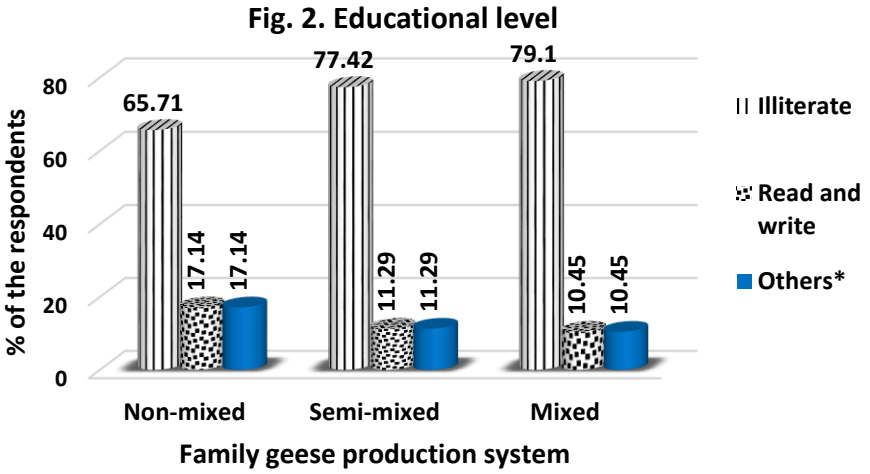


Fig. 2. Educational level
% of the respondents
80
60
40
20
0
65.71
77.42
79.1
17.14
17.14
11.29
11.29
10.45
10.45
Illiterate
Read and write
Others*
Non-mixed
Semi-mixed
Mixed
Family geese production system

Fig. 3.Feeding pattern under the family geese production system

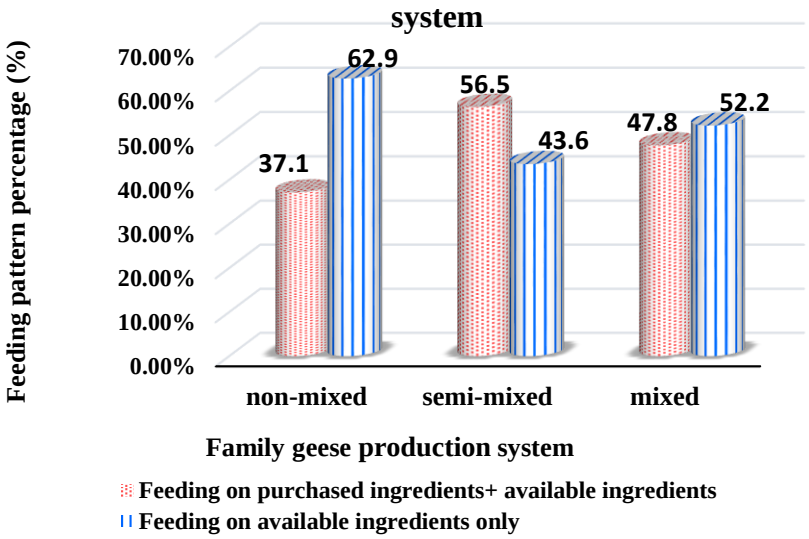
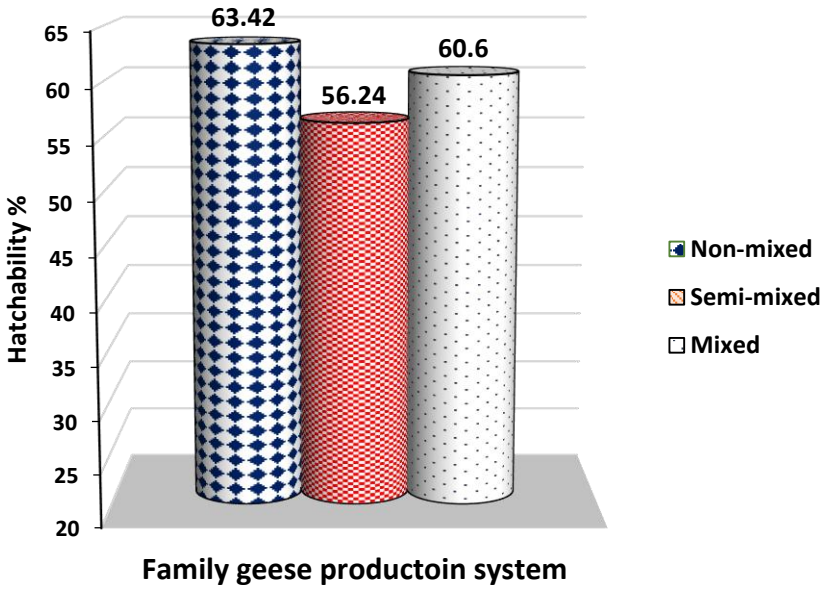


Fig.4. Hatchability %



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الملخص العربى
دراسة وصفية لخصائص و نظم إنتاج الاوز في محافظة سوهاج

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تهدف هذه الدراسة الي وصف نظم إنتاج الأوز. تحديد نقاط القوة والضعف والفرص والتهديدات لنظم إنتاج الاوز في المناطق الريفية بمحافظة سوهاج. تم جمع مجموعة بيانات طولية (المسح المتكرر) ودراسة استقصائية في أربع مراكز، وتم اختيار ثلاث قرى في كل مركز. وقد بلغ العدد الإجمالي للعينة 164 مالكا للأوز. وباستخدام طريقة أخذ العينات العشوائية، تم تجميع البيانات عن طريق إستمارة استبيان مع عقد مقابلات شخصيه لمربين الأوز تم إختيارهم من خلال أسلوب العينات العشوائيه. وقد وجد أن نظام الإنتاج الرئيسي للأوز هو النظام العائلي. وطبقا لنمط الإسكان ، يندرج تحت النظام العائلي ثلاثة أنظمة فرعية هي 1) غير المختلط 2) شبه المختلط 3) المختلط. وجد أن غالبية الأسر (65.71 % و 77.4 % و 79.10 %) من الأميين في الفئة العمرية 31-59 سنة (الفئة العمرية المتوسطة). كان متوسط حجم القطيع 9.83 في النظام الفرعي الغير مختلط ، 5.58 في شبه المختلط و 8.76 للنظام الفرعي المختلط. ويؤثر الدخل الشهري ومستوى الخبرة تأثيرا إيجابيا على حجم القطيع. الأعلاف الخضراء والبقايا (سواء من المحاصيل أو من المطبخ) تعتبر المكون الرئيسي للعليقة ، ومن الجدير بالذكر أن إضافة الحبوب أو العلف التجاري ترتبط بالقدرة المالية لمربي الأوز. وقد كان الغذاء الأكثر تداولا هو الأعلاف الخضراء والبقايا والحبوب حيث بلغ نسبة 40.0٪ 54.84٪ 44.78٪ تحت النظام الفرعي الغير المختلط وشبه المختلط والنظام الفرعي المختلط علي التوالي. وكان معدل حدوث المرض أعلى في النظام الفرعي المختلط (52.24٪) وشبه المختلط (41.94٪) مقارنة بالنظام الفرعي غير المختلط (28.57٪). وأظهر النظام الفرعي غير المختلط أعلى نسبة تفريخ (63.42٪) مقارنة بالنظام شبه المختلط (56.24٪) والمختلط (60.60٪). معظم المربين يقوموا بإجراء الفحص الضوئي للبيض بنسبة 74.29٪، 62.90٪، 65.67٪ للنظم الفرعية الغير مختلطة وشبه مختلطة و المختلطة علي التوالي. ويشكل سوق القرية أكبر منفذ لبيع الاوز للنظام غير المختلط (54.29٪) وشبه المختلط (59.68٪) والنظام الفرعي المختلط (62.69٪). وقد كان انتشار الأمراض و إرتفاع أسعار العلف من أهم المشاكل التي تواجه المربين تحت النظام الفرعي المختلط وغير المختلط على التوالي، في حين كانت الإنتاجية المنخفضة وارتفاع أسعار مواد العلف للنظام الفرعي غير المختلط . ولذلك، فإن أي تحسينات لهذه القيود و المشاكل؛ والتدخل المناسب لأي قصورفي الإدارة، والتوعية بالمرض والسيطرة عليه؛ محو الأمية والتدريب المناسب سوف يؤدي إلى زيادة في إنتاجية الأوز في منطقة الدراسة.