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CHARACTERIZATION AND CONSTRAINS OF SEMI-INTENSIVE BROILER PRODUCTION SYSTEM IN RURAL SECTOR OF AL-SHARKIA AND EL-QALIOBIA GOVERNORATES, EGYPT

M.A. El-Menawey [1], A.A Attallah[1], Y.A. Abdel-Aziz [2], Mai A.M. Youssif [2], and H.B. Gharib [1]

1. Dep. of Anim. Prod., Fac. of Agric., Cairo Uni., Giza, Egypt.
2. Dep. of Anim.Prod. Sys. Res.h, Anim. Prod. Res. Ins., Agric.Res. Center, Minis. of Agric., Dokki, Giza, Egypt.

Corresponding author:maiahmed24.23@gmail.com

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ABSTRACT: This study was carried out to assess the current status of broiler production under semi-intensive system in Egyptian rural sector. Forty three of semi-intensive broiler production system producers were chosen using random sampling method. The study revealed that the flock size in the semi-intensive broiler production system ranged from 2000-3000 with average 2393 chicks. Interestingly, males were the only owner of flocks for the whole system. However, the majority of the producers (65.12%) had free jobs and 58.14% had attained high education level. For both producers were used commercial strains. Clearly, the producers used commercial rations represent 72.09%, while the other 27.91% used homemade (manual) rations. In general, the results indicated that there were insignificant differences detected in total feed intake/chick between the two governorates. The major constrains found in the studied areas, in order of their importance, were lack of access to formal credit, unavailability of feed, high cost of chick price, lack of quality feeds, high feeding cost, lack of training labours, diseases, lack of marketing information, high production elements cost and lack of veterinary services. Therefore, to improve semi-intensive broiler production system in Egypt, the experts from the government, research institutes, universities, non-government organizations (NGOs) and other relevant sectors need to work in a collaborative manner in order to allow sustainable production and fight challenges jointly whenever they arise.

Key words: semi-intensive- broiler- production system.

INTRODUCTION

In the last years there has been growing recognition among the developing community of the role of small-scale commercial poultry production in accelerating the pace of poverty reduction and reaching out to the poorest of the poor (FAOSTAT, 2014). Also, there is increasing evidence to demonstrate the role of small-scale poultry in enhancing the food and nutrition security of the poorest householders and in the promotion of gender equality (Ahuja, 2004). Small-scale or semi-commercial poultry production is seen as a vital tool in reducing poverty and hunger in developing countries (FAO, 2013). Small-scale intensive production system is characterized by medium level of feed, water and veterinary service inputs and minimal to low bio-security. Most small-scale poultry farms obtain their feed and foundation stock from large-scale commercial farms (Nzietchueng, 2008). Semi-intensive farming is believed to be the better system than the traditional ones. According to Mangesha (2012) semi-intensive farming is a way to raise chicken in a small fence space with routine feeding, thus the growth of the poultry can be observed. On the contrary in the traditional one the chicken is raised freely without any cage and any routine feeding, therefore semi intensive native chicken farming is able to produce meat and eggs more than traditional ones and ensure food availability from animal protein for rural communities. Moreover, semi-intensive chicken farming is an alternative to meet the food availability especially meat consumption for rural communities. Ebrahem *et al*. (2012) augmenting the production of semi-intensive broiler and egg production system is an important objective in helping to meet the nutritional needs of growing populations in developing countries. According to Edward *et al. (*2010) reported that, the characteristics and production performance of semi-intensive broiler production system can vary according to different physical, environmental, technical and socioeconomic factors that militate against optimum production. There is a need to assess and understand improved semi-intensive broiler production system in rural Egypt. This will enable the development of specific policies, strategies and activities for improving semi-intensive broiler production system. Therefore, the main objective of this study was to assess the current status of semi-intensive broiler production system in Egyptian rural sector, determine the challenges and investigate the needed recommendations for improvement.

MATERIALS AND METHODS

This study was carried out in two governorates of Egypt (Al-Sharkia and El-Qaliobia). Samples of 43 individual of semi-intensive broiler producers were randomly chosen. This sample was collected from two governorates Al-Sharkia (25 producers) and El-Qaliobia (18 producers) through semi-structured interviews with questionnaires. The data were obtained through monthly visits during the period from June 2016 to December 2017. The random sampling technique was used to choose the semi-intensive broiler producers within the study areas. The data included the producers gender, producers age, producer main job, producers education level, labour, flock size, producers adoption rate (years), flock production performance, management practices

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challenges faced producers and gross margin analysis. Gross margin analysis method was used to estimate the costs and revenue of the smallholder broiler farmers (Ali and Samad, 2013). Chicks total body weight gain; total feed intake and feed conversion ratio (FCR) were calculated at the end of the feeding period. After calculation of livability percentage and feed conversion ratio (FCR), the European Production Efficiency Factor (EPEF) was used to evaluate the growing performance of broilers according to (Marcu *et al.*, 2013).

$$EPEF = \frac{livability\ (\%) \times body\ weight\ (kg)}{marketing\ age\ (day) \times FCR(kg\ feed/kg\ gain)} \times 100$$

A gross margin is the sum of money remaining from the broiler production and marketing (Horticulture Australia, 2011). It is determined by subtracting the variable costs from the revenue of the farm (Firth, 2002). The variable costs included the costs of feeds, vaccines, saw dust, labour, stock, water and electricity. Gross margins are valuable in making decisions. GM = TR-TVC Where: GM = gross margin, TR = total revenue, TVC = total variable cost (the costs incurred in utilizing variable inputs). Enumeration data of the field survey were analyzed by chi-square procedure (Snedecor and Cochran, 1993). The data collected on flock size were statistically analyzed by the least squares procedure of the general linear model (GLM) of SAS program (SAS, 2004). The separation of means was done using the Duncan's New Multiple Range Test (Duncan, 1955) to compare among the significant means. The fixed model used in the analysis was: $Y_{ij} = \mu + G_i + \varepsilon_{ij}$ Where: Y_{ij} = is the value of the respective variable, μ = is the overall mean of the respective variable, G_i=is the effect due to the i^{th} governorates, i = 1, 2 (1= Al-Sharkia, 2= Al-Qaliobia), ε_{ij}=is a random error associated with the ij^{th} observation and is assumed to be independently and normally distributed.

RESULTS AND DISCUSSIONS

Demographic characteristics and institutional support of respondents

As shown in Table 1, the respondents socio-economic characteristics considered in the analysis comprised gender, average respondents age and job, type of labour, education levels and adoption rate. The institutional support characteristics considered in the analysis comprised access to extension services, training, access to credit, and work in group membership. Males were the only owned of flocks in the whole system (100%). The respondent's age were divided into three categories. All producers were over 30 years of age. The majority of producers (62.79%) ranged 30-40 years of age. 23.26% of the producers ranged between 41 and 50 year of age. The remained of producers (13.95%) had more than fifty years of age. 65.12% of the producers had free jobs but 30.23% were employee. The remained (4.65%) of producers were traders. The majority of the producers were 58.14% had attained high education level, while 41.86% had intermediate education level. Males represented the main source of labour (88.37%). Adoption rate of producers ranged 1-3 times of semi-intensive broiler poultry production. 65.12% of the producers adopted three times followed by two times (20.93%) and one time (13.95%). In most semi-intensive broiler poultry production system, chicken production receives limited institutional support services such as extension services, training, veterinary services and

formal credit. Our results showed that 100% of producers had no access to extension services. Moreover, 83.72% of the producer had no access to training, while 16.28% had access to training. In studied areas, only 18.61% of the producers had access to veterinary services. All producers (100%) depended on self-credit there are no formal credits. On the other hand, 60.47% of the producers work in group membership, while 39.53% working alone without help.

Our results were in agreement with those observed by Phommasack (2014). He stated that, in semi-intensive broiler production system, all producers were over 31 year of age. The age ranges of 31-40 and 41-50 were 42.90 and 57.10%, respectively, of the respondents. All, producers were males. He, also, stated that, 57.10% of correspondents have achieved secondary school and 14.30% had tertiary, diploma and primary education had 14.30%. Also, he reported that, nearly, 71.40% of farms used family labour only, while 14.30% used hired labour only, and 14.30 shared between family and hired labour. Ali and Hossain (2008) and Mbuza *et al*. (2017), in Rwanda, stated that, in most cases, managers of broiler poultry farms (75.70%) were males and most of them had attained secondary level of education. It is logical that large training exposure with high education and experience makes a farmer better able to do his job properly.

Broiler flock size and chicks strain

As showed in Table 2, in the two governorates, the flock size in the semi-intensive broiler production system ranged from 2000-3000 with average 2393 broiler chicks. The results indicated that the mean of flock size were 2620 and 2166 broiler chicks in Al-Sharkia and El-Qaliobia, respectively. Our results disagreement with Phommasack (2014), in Laos, under semi-intensive broiler system, stated that the annual flock size output ranged from 1500 to 2400 birds. Also, it is noteworthy that most broiler farmers (68%) kept less than 500 birds per batch and only a few (22%) kept more than 1000 birds per batch (Mbuza *et al*., 2017). On the other hand, in Botswana, Emaikwu *et al*. (2011) stated that, the numbers of broilers per production cycle in small-scale operations ranged from 100 to 2000 birds, with an average of 640 birds. These different between our results and the others may be due to the differences in the physical, environment, techniques and the socioeconomic factors.

As presented in Table 2 the main strains used for broiler production in studied areas are Cobb (46.51%), Habared (37.21%) and Ross (16.28%). most producers (62.79%) purchased their chicks through commercial breed company and 37.21% through local agents. According to Vieira *et al*. (2012), Phommasack (2014) and Mbuza *et al*. (2017), stated that, in semi-intensive broiler system three strains provided were Ross 308 (14.30%), Brown Nick (42.85%) and 3-line crossbreeds (42.85%). Also, Emaikwu *et al*. (2011) mentioned that, in Botswana, The majority (72.90%) of the broiler producers used Cobb strain. About (27.10%) used other strains; amongst them Ross strain was common. High dissemination of these strains may be due to easy access to information about how rearing, high adapted under Egyptian conditions, high production rates and as well as compatibility with the Egyptian consumer taste.

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Management practices

Feed and feeding practices

Data presented in Table 3 showed that, in general, the producers used commercial ration represent 72.09% and the remained 27.91% used homemade ration. In Al-Sharkia and El-Qaliobia, the majority of producers (76 and 66.77% resp.) used commercial rations to feed their flocks, while 24 and 12.50% fed their chick's homemade ration, respectively. In Al-Sharkia and El-Qaliobia governorates the majority of producers (72 and 55.56%, resp.) used commercial starter and finisher diets program. The chicks were fed broiler starter diets for the first three weeks of age and finisher diets up to the market age (6 weeks). The remained percent used commercial starter, grower and finisher diets program, chicks were fed broiler starter diets for ten days of age, grower 11-24 days of age and finisher diets till the market age (42 days).

It is worth mentioning that, in Al-Sharkia and El-Qaliobia, usually producers (81.40%) give feed to their chicks in the morning and the evening, which seem a common practice in the studied areas (Table 3). However, 18.60% of producers fed their chicks once a day with added the same quantity of ration. Also, the results indicated that 24% of the producers in Al-Sharkia depended on old kitchen wear as source of feed container, while 76% purchasing their feed containers. However, only 5.56% of the producers in El-Qaliobia used old kitchen ware, for feeding their chicks, while 94.44% purchasing their feed containers. In whole systems the producers depend on purchasing feed containers represent 83.72% and remained percent 16.28% used old kitchen wear. Our results are in agreement with Badubi (2001). He mentioned that, in Botswana, chicks feed was purchased from local agents. Birds were fed broiler commercial starter diets for the first three weeks (1-21 days) and finisher commercial diets during the remainder of the growth period (22-49 days). On the other hand, Mbuza *et al*. (2017) in Rwanda, observed that, the majority of broiler poultry (92%) producers just bought feedstuffs mainly from commercial supplies and mixed the feeds at farm level. Only 8% of broiler producers purchased premixed commercial feeds. This difference in the feed practices may be due to the availability of feed stuff or commercial ration in nearly regions.

Watering practices

Results presented that almost all of the householders in Al-Sharkia and El-Qaliobia governorates (88 and 66.67%, respectively) depend on tap water as primary source for their chicken (Table 4). While, in the frequency of watering about 96 and 88.89% of the producers in Al-Sharkia and El-Qaliobia governorates, respectively provide water for their chick twice a day usually in the morning and evening. Concerning the source of drinkers, all producers (100%) in Al-Sharkia and 61.11% in El-Qaliobia governorates used purchasing drinkers. Additionally 38.89% used old kitchen wear in El-Qaliobia. Moreover, in the frequency of clean drinkers (Table 4) almost all of the producers in Al-Sharkia and El-Qaliobia governorates cleaned drinkers regularly once a day. About 25.58% of householders in the two governorates disposed of old water when they added new water.

Our results are disagreement with those reported by Phommasack (2014) in Laos. He reported that all farmers were dependent on ground water for the supply

of water. Water was pumped and stored concrete or plastic tanks. Also, Mbuza *et al*. (2016) stated that, all producers used water wells for supply their chickens with water and 68% practiced manual watering of chickens. This difference may be due to in Egyptian rural most of semi-intensive broiler system producer depend on floor in their home to rearing chicks for that they used tap water, also to minimize costs.

Housing practices

The results presented in Table 5 indicated that, almost of all producers in Al-Sharkia governorate used floor (96%) in their houses to keep chickens. Otherwise, in El-Qaliobia governorate most of producers (88.89%) used small chicken's house to kept chickens. In general almost of producers (60.47%) tend to kept chickens in floor to minimize costs. The results showed that, all producers (100%) under semi-intensive broiler production system, in Al-Sharkia and El-Qaliobia governorates used concrete to build their chickens houses. A large proportion of producers (76.74%) used straw, as litter, in their chicken houses. Moreover, there is little proportion (23.26%) used sawdust as a litter in their chicken houses.

Our results are disagreement with Badubi (2001), in Botswana, reported that, the sawdust was the most popular bedding material (55.90%) followed by wood shavings (35.60%). The remaining producers (8.5%) used other types of bedding such as paper, grass and sorghum bran. According to Emaikwu *et al*. (2011) in Nigeria; Anang *et al*. (2013), in Ghana; Kawsar *et al*. (2013) in Bangladesh and Mbuza *et al*. (2017) in Rwanda, most of all assessed broiler farms were using the deep litter system and saw dust was the most used material for litter (91.50%). This difference may be due to the available material in rural areas, and minimizes cost.

Production performance

Results presented in Table 6, indicated that, no significant differences in total feed intake/chick/period between the two governorates. The Mean of total feed intake/chick/period in Al-Sharkia and El-Qaliobia governorates (from day old chick to 42 days old) were 5.10 and 5.05kg, respectively. While, in general, the feed intake was 5.07kg. Moreover, there were no statistically significant differences in initial body weight between the two governorates. It was about 46.00 gram. There were no statistically significant differences in final body weight between the two governorates. The final body weights in two governorates were 2.54 and 2.49 kg in Al-Sharkia and El-Qaliobia, respectively. Moreover, there were no statistically significant differences in total body weight gain, feed conversion ratio (FCR) and mortality rate/period (%) between the two governorates. The results indicated that in general the body weight gain (2.47 kg), FCR ratio (2.06) and mortality rate (10.13%). The performance of broiler chicks was also evaluated in terms of European Production Efficiency Factor (EPEF) (Bhamare *et al*., 2016). There were no significant differences in EPEF between the two studied areas Al-Sharkia and El-Qaliobia governorates. The EPEF values were in Al-Sharkia 265.50 and in El-Qaliobia 255.81. As general, the EPEF was 260.66 it's an indicator for good rearing for broiler under semi-intensive broiler poultry production system in rural Egypt.

Our results are disagreement with these mentioned by Badubi (2001), in Botswana, Avila *et al*. (2012), Mishra *et al*. (2013), Imran *et al*. (2014), Tang *et al*.

(2014), Zeng, *et al*. (2015). They reported that the average slaughter age of broilers was estimated to be 48.3 days, the average weight at slaughter being 1.7 kg while the average carcass weight was 1.4 kg. The average daily feed intake per bird for small-scale broiler farms was 91.10 g and the FCR was 2.72 kg feed/kg live weight. It should be noted, however, that some producers did not keep good records. Also, Our results in final body weight are disagreement with these reported by Ghosh *et al*. (2012), Nogueira *et al*. (2013), Cengiz *et al*. (2015), Adeyemo *et al*. (2016), Farhadi *et al*. (2016) and Kryeziu *et al*. (2018), in broiler chicks the average final body weight (kg) at 42 days old ranged 1.90-2.04 kg. Although our results are disagreement with Mbuza *et al*. (2017) in mortality rate (14%) of broiler chicks before 4 weeks and after 4 weeks it drops to 9%, our explanation are agreement with those he reported. he reported that, most of the farmers did not properly clean the poultry premises as they never disinfected the pens before introducing new batches of day-old chick. On the other hand our results are agreement with Govil *et al*. (2017) and Kryeziu *et al*. (2018) in EPEF. They reported that the EPEF in broilers at 42 days old ranged 261.68-273.24 with good rearing conditions.

Economic evaluation

As showed in Table 7, opportunity cost approach was adopted for economic analysis in this study rather than financial analysis of cost of inputs and revenues of outputs. Cash values of variable costs included day old chick's price, feed, labour, veterinary services and drugs, litter, water and power. As most of the labour used in the rural sector is unpaid family labour, the cost of labour was estimated according to the current rates in the studied areas. Revenues of the broiler included price of live body weight and litter. The total variable costs/chick/period was significantly higher in El-Qaliobia than in Al-Sharkia governorates ($p=0.05$). It reached about 46.07 and 45.35 LE for both governorates, respectively. The increase in the variable cost in El-Qaliobia governorate may be due to the increase in cost of labour and water cost under this governorate. The largest item of the variable costs, in both governorates, was feeding since it represented 33.15 and 33.17 LE/chicks in Al-Sharkia and El-Qaliobia, respectively. The revenues/chick/periods in Al-Sharkia were higher than that of El-Qaliobia governorates (about 58.42 and 57.27 LE respectively per hen/period (23 LE/kg live weight)). The measures of economic efficiency showed that Al-Sharkia governorate was more efficient since the gross margin was equal to 13.07 as compared to 11.20 LE for El-Qaliobia governorate at 42 days old. Moreover, the ratio of the revenues/total variable costs at 42 days old was found to be 1.28 LE in Al-Sharkia governorate which was higher than El-Qaliobia governorate of 1.24 LE (Table 7). Our results are in agreement with those reported by FAO (2017). FAO reported that by the vertically integrated companies the cost of production in Egypt is around US$ 1.35 - 1.37/kg (22.95 -23.29 LE/kg) of live weight.

Major constrains faced producers

Results represented in Table 8, indicated significant differences ($p<0.05$), in the major constrains between the two governorates (Al-Sharkia and El-Qaliobia). The major constrains present in the studied areas, in the order of their importance, were lack of access to formal

credit (100%), unavailability of feed (88.37%), lack of producers training (83.72%), high chick price (81.40%), lack of feed quality (81.40%), high feeding cost (81.40%), lack of labours training (81.40%) diseases (79.07%), lack of marketing information (79.07%), high production elements cost (76.74%) and lack of veterinary services (72.09%).In previous study by Mbuza *et al*. (2017) mentioned that, broiler farmers mentioned many challenges of which lack of quality feeds (59.50%) and poor access to markets (45.90%) were most cited. Whereas, prevalence of poultry diseases (32.40%) and lack of training on modern poultry production practices (8.10%) were also cited as challenges. These may indicate poor service provision from private companies that supply feeds, credits. Moreover, Yemane *et al*. (2016), in Ethiopia, found that, the high price of feed, shortage of land, unavailability of chicks in time, high cost of chicks, feed quality, shortage of water, unavailability of feed in the nearby area, marketing difficulties during selling, health problem, lack of access to credit and inadequate training were the major constraints in small-scale intensive urban poultry production. In Ghana, Anang *et al*. (2013) reported that, inadequate finance was identified by broiler producers as the most critical constraint limiting farmers' ability to carry out management practices like feeding and diseases control as well as the purchase of day-old chicks.

CONCLUSION

Semi-intensive broiler production system in rural Egypt was defined as flocks ranged between 2000-3000 birds. This production system represents a transition stage between traditional and commercial broiler production and combines traditional practices with improved technology and marketing. The major constrains faced producers in studied areas to improved their productivity can be concluded in order of their importance, high feeding cost, lack of feed quality, prevalence of diseases, high production elements cost, lack of access to formal credit, lack of labours training, lack of producers training, lack of veterinary services, high chick price and unavailability of feed in the nearby area. Therefore, a national poultry policy should be in place to improve the organization of production and marketing, allowing increase in stability and security of poultry output throughout the year. To improved semi-intensive broiler system experts from the government, research institutes, universities, NGOs and other relevant sectors need to work in a collaborative manner in order to allow sustainable production and fight challenges jointly whenever they arise.

semi-intensive- broiler- production system.

Table (1): Demographic characteristics and institutional support of respondents under semi-intensive broiler production system

Items	Al-Sharkia		El-Qaliobia		Overall mean	
	N	(%)	N	(%)	N	(%)
Gender						
Male	25	100	18	100	43	100
Female	0	0	0	0	0	0
Respondents age (year)						
30-40	17	68	10	55.55	27	62.79
41-50	5	20	5	27.78	10	23.26
More than 50	3	12	3	16.67	6	13.95
Pr>ChiSq		0.0010^{***}		0.1146^{NS}		0.0002^{***}
Job						
Trader	0	0	2	11.11	2	4.65
Employee	7	28	6	33.33	13	30.23
Free job	18	72	10	55.56	28	65.12
Pr>ChiSq		0.0278^{*}		0.0595^{*}		$<0.0001^{***}$
Education levels						
High	18	72	7	38.89	25	58.14
Intermediate	7	28	11	61.11	18	41.86
Pr>ChiSq		0.0278^{*}		0.3458^{NS}		0.2858^{Ns}
Labour						
Male	20	80	18	100	38	88.37
Family	5	20	0	0	5	11.63
Pr>ChiSq		0.0027^{**}		-		$<0.0001^{***}$
Adoption rate						
One time	1	4	5	27.78	6	13.95
Two times	6	24	3	16.67	9	20.93
Three times	18	72	10	55.56	28	65.12
Pr>ChiSq		0.0001^{***}		0.1146^{NS}		$<0.0001^{***}$
No Access to extension service	25	100	18	100	43	100
Access to training						
No	20	80	16	88.89	36	83.72
Yes	5	20	2	11.11	7	16.28
Pr>ChiSq		0.0027^{**}		0.0010^{***}		$<0.0001^{***}$
Access to veterinary services						
No	20	80	15	83.33	35	81.39
Yes	5	20	3	16.67	8	18.61
Pr>ChiSq		0.0027^{**}		0.0002^{***}		$<0.0001^{***}$
Access to credit (Self-credit)	25	100	18	100	43	100
Work in group membership						
No	2	8	15	83.33	17	39.53
Yes	23	92	3	16.67	26	60.47
Pr>ChiSq		$<0.0001^{***}$		0.0047^{**}		0.1699^{NS}

p-χ^2 within item, within column (NS=Non-significant, *=P<0.05, **=P<0.01 and ***=P<0.001)

Table (2): Flock size and chicks strain of broiler under semi-intensive broiler production system

Items	Al-Sharkia		El-Qaliobia		Overall mean	
	N	(%)	N	(%)	N	(%)
Average flock size (N)	2620±87.93[a]		2166±90.38[b]		2393 (2000-3000)	
Types of strain						
Cobb	12	48	8	44.44	20	46.51
Habared	10	40	6	33.33	16	37.21
Ross	3	12	4	22.22	7	16.28
Pr>ChiSq		0.0232*		0.0216*		0.0573*
Source of chicks						
Local agents	6	24	10	55.56	16	37.21
Breed company	19	76	8	44.44	27	62.79
Pr>ChiSq		0.0093**		0.6374^{NS}		0.0582*

[a-b] Means with different superscripts within each row are significantly different ($p<0.05$).
p-χ^2 within item, within column (NS=Non-significant, *=P<0.05 and **=P<0.01)

Table (3): Feed and feeding practices under semi-intensive broiler production system

Items	Al-Sharkia		El-Qaliobia		Overall mean	
	N	(%)	N	(%)	N	(%)
Type of feed						
Commercial ration	19	76	12	66.67	31	72.09
homemade ration	6	24	6	33.33	12	27.91
Pr>ChiSq		0.0093**		0.1573^{NS}		0.0038**
Feeding programs						
Starter-finisher program	18	72	10	55.56	28	65.11
Starter-grower-finisher program	7	28	8	44.44	15	34.89
Pr>ChiSq		0.0278*		0.6374^{NS}		0.0474*
Feeding frequency						
Once a day	4	16	4	22.22	8	18.60
Twice a day	21	84	14	77.78	35	81.40
Pr>ChiSq		0.0007***		0.0184**		<0.0001***
Containers source						
Purchased	19	76	17	94.44	36	83.72
Old kitchen wear	6	24	1	5.56	7	16.28
Pr>ChiSq		0.0093**		0.0002***		<0.0001***

p-χ^2 within item, within column (NS=Non-significant, *=P<0.05, **=P<0.01 and ***=P<0.001)

semi-intensive- broiler- production system.

Table (4): Watering practices under semi-intensive broiler production system

Items	Al-Sharkia		El-Qaliobia		Overall mean	
	N	(%)	N	(%)	N	(%)
Source of drink water						
Tap water	22	88	12	66.67	34	79.07
Ground water	3	12	6	33.33	9	20.93
Pr>ChiSq		0.0001^{***}		0.1573^{Ns}		0.0001^{***}
Frequency of watering						
Once	1	4	2	11.11	3	6.98
Twice	24	96	16	88.89	40	93.02
Pr>ChiSq		$<0.0001^{***}$		0.0010^{***}		$<0.0001^{***}$
Source of drinkers						
Purchased	25	100	11	61.11	36	83.72
Old kitchen wear	0	0	7	38.89	7	16.28
Pr>ChiSq		-		0.3458^{Ns}		$<0.0001^{***}$
Cleaning of drinkers						
water only	10	40	16	88.89	26	60.47
Water with antiseptic	15	60	2	11.11	17	39.53
Pr>ChiSq		0.3173^{NS}		0.0010^{***}		0.1699^{Ns}
Frequency of cleaning						
Once	25	100	18	100	43	100
Twice	0	0	0	0	0	0
Pr>ChiSq		-		-		-
Disposal of old water						
Yes	7	28	4	22.22	11	25.58
No	18	72	14	77.78	32	74.42
Pr>ChiSq		0.0278^{*}		0.0184^{**}		0.0014^{***}

p-χ^2 within item, within column (NS=Non-significant, *=P<0.05, **=P<0.01 and ***=P<0.001)

Table(5): Housing practices under semi-intensive broiler production system

Items	Al-Sharkia		El-Qaliobia		Overall mean	
	N	(%)	N	(%)	N	(%)
Housing type						
Floor in home	24	96	2	11.11	26	60.47
Small chickens house	1	4	16	88.89	17	39.53
Pr>ChiSq		$<0.0001^{***}$		0.0010^{***}		0.1699^{NS}
Housing materials						
Concrete	25	100	18	100	43	100
Mud	0	0	0	0	0	0
Pr>ChiSq		-		-		-
Type of litter						
Straw	22	88	11	61.11	33	76.74
Sawdust	3	12	7	38.89	10	23.26
Pr>ChiSq		0.0001^{***}		0.3458^{NS}		0.0005^{***}

p-χ^2 within item, within column (NS=Non-significant and *** =P<0.001)

Table (6):

Items	Al-Sharkia	El-Qaliobia	Overall mean
Total feed intake/hen/period (kg)	5.10±0.59	5.05±0.84	5.07
Initial body weight (gm)	45.96±0.66	46.00±0.83	45.98
Final body weight (kg)	2.54±0.05	2.49±0.04	2.52
Total body weight gain (kg)	2.49±0.04	2.44±0.06	2.47
Feed conversion ratio (FCR)	2.05±0.04	2.08±0.06	2.06
European production efficiency factor (EPEF)	265.50±10.25	255.81±12.66	260.66
Mortality rate/period (%)	10	10.25	10.13

Non-significant between two governorates in broiler performance under semi-intensive production system

Table(7) Economic features under semi-intensive broiler production system

Items	Al-Sharkia	El-Qaliobia	Overall mean	Sig.
Variable cost				
Chick price (LE)	5.83±0.18	5.88±0.34	5.86	NS
Feed cost/chick/period (LE) (6.50 LE/kg)	33.15±0.47	33.17±0.53	33.16	NS
Labour cost/chick/period (LE)	$0.82±0.02^{b}$	$0.97±0.02^{a}$	0.89	***
Litter cost/chick/period (LE)	0.46±0.02	0.48±0.02	0.47	NS
Veterinary cost/chick/period (LE)	3.59±0.07	3.76±0.09	3.67	NS
Water and electric cost/chick/period (LE)	$1.50±0.17^{b}$	$1.81±0.11^{a}$	1.65	*
Total variable/chick/period (LE)	$45.35±0.30^{b}$	$46.07±0.21^{a}$	45.70	*
Revenues				
Revenues/chick/period (LE) (23 LE/kg)	58.42±1.11	57.27±1.16	57.85	NS
Measures of economic efficiency				
Gross margin (LE)	$13.07±1.22^{a}$	$11.20±1.32^{b}$	12.14	*
Revenues/total variable cost	1.28±0.05	1.24±0.02	1.26	NS

a-b Means with different superscripts within each row are significantly different (NS=Non-significant,*=P<0.05 and *** = P<0.001)

semi-intensive- broiler- production system.

Table (8): Major constrains faced producers under semi-intensive broiler poultry production system

Items	Al-Sharkia		El-Qaliobia		Overall mean	
	N	(%)	N	(%)	N	(%)
High cost of chick price	21	84	14	77.78	35	81.40
Lack of feed quality	23	92	12	66.67	35	81.40
High feeding cost	20	80	15	83.33	35	81.40
Unavailability of feed in the nearby area	23	92	15	83.33	38	88.37
High production elements cost	19	76	14	77.78	33	76.74
Prevalence of diseases	22	88	12	66.67	34	79.07
Lack of producers training (untrained)	21	84	15	83.33	36	83.72
Lack of labours training (untrained)	22	88	13	72.22	35	81.40
Lack of marketing information	17	68	17	94.44	34	79.07
Lack of access to formal credit	25	100	18	100	43	100
Lack of veterinary services	16	64	15	83.33	31	72.09

Differences between two governorates for constrains are significant (χ^2 =24.27, P<0.05)

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الملخص العربي

توصيف نظام إنتاج بداري التسمين شبه المكثف والمعوقات التي تواجة المنتجين في القطاع الريفي بمحافظتي الشرقية والدقهلية- مصر

محمد عبد الرحمن المناوي [1]، عبد العزيز عطاالله [1]، ياسر أحمد عبدالعزيز [2] ، مي أحمد ماهر يوسف [2] ، حسن بيومي غريب [1]

1. قسم الإنتاج الحيواني ، كلية الزراعة، جامعة القاهرة، جيزة، مصر
2. قسم بحوث نظم الإنتاج الحيوانى، معهد بحوث الإنتاج الحيوانى، مركز البحوث الزراعية، وزارة الزراعة، الدقي، جيزه، مصر

أجريت هذة الدراسة لتقييم الوضع الحالي لنظام إنتاج بداري التسمين شبة المكثف في القطاع الريفي المصري. تم إختيار عدد ثلاثة وأربعون منتج تحت نظام إنتاج بداري التسمين شبة المكثف. وكشفت الدراسة أن حجم القطيع تحت هذا النظام يتراوح بين 2000- 3000 بمتوسط 2393 كتكوت تسمين. وكان الرجال هم الوحيدون المالكون لبداري التسمين. وكانت أغلبية المنتجين بنسبة 65.12% يعملون بأعمال حرة، ومن ذوات مستوي التعليم العالي (58.14%). يستخدم جميع المنتجين السلات التجارية في العملية الإنتاجية. لوحظ أن المنتجين في منطقة الدراسة يستخدمون الأعلاف التجارية لتغذية قطعانهم بنسبة 72.09% والنسبة المتبقية 27.91% يستخدمون مخاليط الأعلاف. أوضحت النتائج أنه لايوجد هناك أي فروق معنوية بين المحافظتين في كمية الغذاء المستهلك لكل كتكوت تسمين خلال فترة التربية. وتمثلت أهم المعوقات في المناطق تحت الدراسة، حسب ترتيب أهميتها، عدم إمكانية الحصول على الائتمان الرسمي، عدم توفر الأعلاف، إرتفاع سعر الكتاكيت، عدم جودة الأعلاف، إرتفاع تكاليف التغذية، عدم وجود العاملة المدربة، الأمراض، نقص المعلومات التسويقية، إرتفاع تكلفة عناصر الإنتاج والافتقار إلى الخدمات البيطرية. ولذلك لتحسين نظام إنتاج كتاكيت التسمين شبة المكثف في مصر كان لزاما علي الخبراء من الحكومة والمعاهد البحثية والجامعات والمنظمات والقطاعات الأخري ذات الصلة أن يعملوا بصورة تعاونية من أجل إستدامة هذا النظام والتصدي للتحديات فور ظهورها.

الكلمات الدالة: شبه المكثف، بداري التسمين، نظام الإنتاج.