Assiut J. Agric. Sci., 50 (4) 2019 (64-72) *ISSN: 1110-0486*
Website: *www.aun.edu.eg/faculty_agriculture/journals_issues_form.php* ***E-mail: ajas@aun.edu.eg***

Comparative Study between New Valley and Assiut Governorates in Socio-economic Characteristics and Herd Composition of Smallholders Crop/livestock Production System

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Received on: 6/11/2019 **Accepted for publication on:** 27/11 /2019

Abstract

This research was designed to study the socio-economic characteristics and ruminant for smallholders of crop/livestock production system. Data were collected to enhance understanding of agriculture in general and ruminant production. The primary data for this study were obtained using a pre-tested questionnaire. Accordingly, 70 households from seven villages of EL-Kharga (Aljazayir, Bulaq, Nasir Althawra, Bortseid, Sharikat 55, Alkartum and Sanaa) and 70 households from seven villages of EL-Ghanaim (Almushayiea, Awlad muhamad, Aleazayiza, Aleamiriu, Dayr Alganadila, Aleizbat Aljadida and Eizbat Aldawik) were collected. Located in EL-Kharaga and EL-Aghanaim were randomly selected to participate in this study. The study revealed that smallholders keep mixed livestock species. Cows were the major livestock activity in located study area. In New Valley governorate 61.4% of breeders have medium age between 42 to 60 years, while the percent was 55.7% in Assiut governorate. Distribution of households by marital status reveals that 94.29%, 91.43% are married, while only 5.71%, 2.86% are single in New Valley and Assiut governorate, respectively. The proportions of households who have uneducated, reads and writes, primary, preparatory, secondary schools, university were: 27.14, 0.00, 1.43, 7.14, 54.29, 10.0%, respectively in New Valley, while there were 48.57, 7.14, 0.00, 4.29, 27.14, 12.86%, in Assiut, respectively. The literacy rate estimated in New Valley and Assiut was 72.86%, 51.43%, respectively. Family members participating in agriculture activities are 100% only male in New Valley. Since, the percent of working in field of cultivation are 32.86%, 34.29 % for large ruminants and 33.33%, 32.38% working for small ruminants, in New Valley and Assiut, respectively. The percent of household owned was 67.32% cattle; 18.63% sheep and 14.05% goats and zero % buffalo, while its was 52.54% cattle; sheep 27.54%; Goat 3.81% and buffalo16.10% in New Valley and Assiut governorate. The most important animals production constraints were 8.57% nutrition, 28.57% and 21.43% diseases and Weak Productivity, respectively, difficulty Marketing and lack of profitability were 35.71%-5.71% in New Valley, while in Assiut governorate the percent's were observed in nutrition 44.29%, diseases and weak productivity 35.71- 12.86%, lack of profitability 7.14% with no difficulty marketing. It could concluded that livestock production is the main means of livelihood in the studied area and the importance of farm activities varies from region to region and largely determined by ecological and economic factors.

Keywords*: Socio-economic characteristics, ruminants, smallholders, crop/livestock production system, constraints.*

Introduction

Production system could be described as a combination among physical, biological and socio-economic characteristics. The livestock production system is a part of the whole agriculture system and includes other subsystems like crop/livestock production, (Dillon and Anderson, 1984). The crop/livestock production system is one of the most important systems of livestock production system in Egypt. This system is distributed in different regions of the country, Nile delta, Nile valley and the newly reclaimed lands and Upper Egypt. Crop/livestock production system in Nile delta is the main milk production system which provides 90% of the total milk production. Further, 85% of the total domestic milk output is provided by traditional farms and 15% is provided by the commercial sector (Moalr, 2004).

In the future, production will increasingly be affected by competition for natural resources, particularly land and water, competition between food and feed and by the need to operate in a carbon-constrained economy. Developments in breeding, nutrition and animal health will continue to contribute to increase potential production and further efficiency and genetic gains. Livestock production is likely to be increasingly affected by welfare legislation. Carbon constraints and environmental and animal demand for livestock products in the future could be heavily moderated by socio-economic factors such as human health concerns and changing socio-cultural values. There is considerable uncertainty as to how these factors will play out in different regions of the world in the coming decades. Then, this paper was carried out to discuss some factors affected the crop/livestock production in two different regions EL-Kharaga (from New Valley governorate) and EL-Ghanaim (from Assiut governorate).

Materials and Methods

Data Collection and analysis

Data were collected to enhance understanding of agriculture in general and ruminant production. The primary data for this study were obtained using a pre-tested questionnaire. Accordingly, 70 households from seven villages of EL-Kharga (Aljazayir, Bulaq, Nasir Althawra, Bortseid, Sharikat 55, Alkartum and Sanaa) and 70 households from seven villages of EL-Ghanaim (Almushayiea, Awlad muhamad, Aleazayiza, Aleamiriu, Dayr Alganadila, Aleizbat Aljadida and Eizbat Aldawik) were collected. Located in EL-Kharaga and EL-Anaim were randomly selected to participate in this study. A questionnaire was designed and submitted to the above mentioned households included the following variables1- Socio–economic characteristics of households

2- Production resources. a) farm size (land). b) Family size. c) labor: family labor and hired labor (permanent and casual)

3- Animal production.

a) Herd size, b) Herd composition and c) Animal productive status.

Statistical analyses

All data were statistically analyzed using SAS (2004). The frequencies of either New Valley or As-

siut governorates questionnaires were analysed using χ^2.

Results and Discussion

1. Socio–economic characteristics of households.

1.1. Household characteristics.

As show in Table (1), in New Valley governorate 61.4% of breeders have medium age between 42 to 60 years, while the percent was 55.7% in Assiut governorate with insignificantly differences, implying that they are young and able to work. According to the report of **(**Khalil *et al.,* 2013) the average farmer's age in the north western coastal zone of Egypt is around 51 years old which is higher than the current results. In other developing countries in Africa, household heads average age in Burkina Faso is 44.4 years (Kabore *et al.*, 2011). El-Fateh (2014) reported that the average age of household head is 43.2 years old. 52.9% of breeders have medium age between 30 to 50 years. In Nigeria about 33.6% of the breeders fell between 31 and 40 years of age and 31.3% of them between 21 and 30 years of age (Fernandez *et al.,* 2009). On the other hand, the average farmer's age in Spain is 50.5 years (Lawal-Adebowale, 2011).

Distribution of households by marital status reveals that 94.29% are married, while only 5.71% are single. The rest are either divorced or widowed didn't found in New Valley. In Assiut distribution of households by marital status reveals that 91.43% are married, while only 2.86% are single. The rest are either divorced or widowed 5.71%. El-Fateh (2014) recoded that distribution of households by marital status reveals that 92.2% are married, while only 5.8% are single. The rest are either divorced or widowed 2% (Table 1).

The proportions of households who have uneducated, reads and writes, primary, preparatory, secondary schools, university Were: 27.14, 0.00, 1.43, 7.14, 54.29, 10%, respectively in New Valley, while there were 48.57, 7.14 , 0.00, 4.29, 27.14, 12.86%, in Assiut, respectively.

The literacy rate estimated in New Valley and Assiut were 72.86%, 51.43%, respectively, and these values were higher than that reported for North western Coastal Zone of Egypt 42% estimated by Khalil *et al.* (2013). In other developing countries, Kabore *et al.* (2011) reported that the literacy rate in Burkina Faso was 70%. In Nigeria lawal-Adebowale (2011) showed that most of breeders 37.3% had secondary school education and 18.9% had tertiary school education.

The proportions of households who have basic education, preparatory, high school, graduate education or without education were: 1.4, 7.1, 54.3, 10 and 27.2% of respondents, respectively in New Valley, while it's were 7.1, 4.3, 27.1, 12.9, 48.5% of respondents, in Assiut, respectively. With significant differences at 1% level ($P<0.01$). Response of farmers to innovation is highly associated with their education and degree of awareness.

Table 1. Characteristics of the studied household heads in New Valley and Assiut Governorates.

Descriptor	New Valley		Assiut	
	No	%	No	%
Age of housed head				
16 Year- 40 Year	12	17.15	17	24.3
42 Year-60 Year	43	61.4	39	55.7
61 Year-85Year	15	21.45	14	20
Total	70	100	70	100
(P>0.05)				
Social				
Married	66	94.29	64	91.43
Single	4	5.71	2	2.86
Widow		-	4	5.71
Total	70	100	70	100
(P>0.05)				
Education Level				
Uneducated	19	27.14	34	48.57
Reads and Write		-	5	7.14
Primary	1	1.43		-
Preparatory	5	7.14	3	4.29
Secondary	38	54.29	19	27.14
University	7	10	9	12.86
Total	70	100	70	100
(P<0.01)				

1.2. Family members and their participation in agriculture activities between New Valley and Assiut Governorate.

Table (2) show that family members participating in agriculture activities are 100% only male in New Valley. While it was 33.33% male and 66.67% female in Assiut. Since, the percent of working in field of cultivation are 32.86%, 34.29% for large ruminants and 33.33%, 32.38% working for small ruminants, in New Valley and Assiut, respectively. Metawi (2011) found that the average family size was 7.8 and 5.6 people under rain fed and irrigated farming systems of the North Coastal Zone of Egypt, respectively. The average family size in the old cultivated areas of Sharkeia Governorate of Egypt was 6.4 people in the studied area, adult male are usually involved in both cropping and animal production activities, while women usually taking care of small ruminants. Also, Khalil *et al.*(2013) reported that young sons and daughters still in the schools they have no power to do farm activities.

1.3. Household Ownership of Livestock Species and animal Sex between New Valley Governorate

Table (3) revealed the livestock holding in the study area. The percent of household owned was 67.32% cattle; 18.63% sheep and 14.05% goats and zero% buffalo, while its was 52.54% cattle; sheep 27.54%; Goat 3.81% and buffalo 16.10% in New Valley and Assiut governorate, respectively with highly significant differences. According to animals sex, the percent of male was 33.33% and 44.49, while it was 66.675 and 55.51% female for New Valley and Assiut, respectively with highly significant differences between them.

Table 2. Family members and their participation in agriculture activities of New Valley and Assiut Governorates

Working sex	New Valley		Assiut	
	NO	%	NO	%
Male	70	100.00	70	33.33
Female			140	66.67
Total	70	100	210	100
(P<0.01)				
Working types				
Field cultivation	71	33.81	70	33.33
Care for large ruminants	69	32.86	72	34.29
Care for small ruminants	70	33.33	68	32.38
Total	210	100	210	100
(P>0.05)				

Table 3. Household Ownership of Livestock Species and Animal Sex between New Valley and Assiut governorate

Animal Type	New Valley		Assiut	
	NO	%	NO	%
Buffalo	-	-	38	16.10
Cow	206	67.32	124	52.54
Sheep	57	18.63	65	27.54
Goat	43	14.05	9	3.81
Total	306	100	236	100
(P <0.001)				
Animal Sex	NO	%	NO	%
Male	102	33.33	105	44.49
Female	204	66.67	131	55.51
Total	306	100	236	100
(P<0.01)				

Abd El-Monaime (2018) observed that the household own higher number of sheep (44.45%) and goat (45.42%) than cattle (3.83%) and buffalo (6.30%) of farmer herds among six studied area located in east and west river Nile in Assiut governorate. El-Fateh (2014) found that livestock holding in New Valley governorate kept an average of 4.18 cattle; 1.74 sheep and 1.76 goats. However, households in the studied area own higher number of cattle; this may be due to relatively larger land holding and more covered by cereal crop. Elnahas (2008) showed that farmers in Sohage Governorate kept an average of 0.34 animal units native cattle, 0.13 of crossbred cattle, 1.06 animal units of buffalo 12.7 ewe equivalents and 6.15 doe equivalent. FAO (2007) stated that cattle, buffalo, sheep and goat constitute were 14, 23, 37 and 26%, respectively, of farmer herds among the Middle East countries.

2. Major constrains reported by households in ruminant animals of New Valley and Assiut Governorate

Households were asked to indicate the most important animals production constraints and to priorities

them. They indicated the nutrition was 8.57%, diseases and Weak Productivity were 28.57% and 21.43%, respectively, difficulty Marketing and lack of profitability were 35.71%-5.71% in New Valley, while in Assiut governorate the percent's were observed in nutrition 44.29%, diseases and weak productivity 35.71-12.86%, lack of profitability 7.14% with no difficulty marketing (Table 4). Abd El-Monaime (2018) showed the most important small ruminant production constraints are feed shortage (42.44%), lack of enough input for small ruminant production (25.44%), marketing (15.48%) and poor health management (16.64%). Desta (2017) reported that, The majority of the sample producers included animal diseases, inadequate animal health services, shortage of feed, land, labor and predators as major constraints of small ruminant. Abdel –Monaime (2014) reported that feed shortage (45.4%), lack of enough input for small ruminant production (25.6%), marketing and poor health management (14.4%) were the most important constrains which facing the respondents.

Metawi (2011) found that nutrition, lack of appropriate goat breed and animal health are the most important constrain in the transhumant/extensive system, semi-intensive system and small holder system, respectively. Baker and Gray (2004) mentioned that the development achievement for sheep and goats will only be successful when simultaneously addressing several constraints: feeding, health control, general management, as well as cost and availability of credit and marketing infrastructure.

Table 4. Major constrains reported by households in ruminant animals each of Governorate.(Row pct).

Farm Problems	New Valley		Assiut	
	NO	%	NO	%
Nutrition	6	8.57	31	44.29
Diseases	20	28.57	25	35.71
Weak Productivity	15	21.43	9	12.86
Difficulty Marketing	25	35.71	-	-
Lack of Profitability	4	5.71	5	7.14
Total	70	100	70	100
(P<.0001)				

Although the feed shortage is indicated across all seasons of the year the highest percentage was reported for summer season. The higher feed shortage during the summer season may be due to water scarcity. Households in the study area have limited practice of feed conservation on the form of hay or silage. The major reason for not practiced feed conservation techniques as reported by respondents were lack of awareness and experience. Agriculture extension workers are supposed to advice small- scale farmers on the best animal management practices. Diseases and parasites hamper small ruminant production by causing high mortalities especially among suckling animals Generally, animal health services in the studied are is characterized by lack of animal drugs, inade-

quacy of veterinary services and lack of trained personal to deliver proper livestock health services. Respondents were expected that more frequent visits by veterinary personal would lower the significance of diseases as constraints. This is because most respondents were satisfied with the veterinary treatment but not the small ruminant production advisory services.

However, it is believed that disease resistance in animals is strongly genotypic rather than environmental effects (Charray *et al*., 1992) the major problems of marketing as reported by respondents are seasonality of market price. Information on market price, supply and demand is not available to households. Metawi (2011) found that nutrition. Lack of appropriate goat breed and animal health is the most important constrain in the transhumant/extensive system, semi-intensive system and small holder system, respectively.

Adesehinwa *et al.* (2004) mentioned that problems of disease and insects have a significant impact on livestock production. Ahmed *et al.* (1999) showed that the major constraints in North Sinai are the highly fluctuating feed supply due to water availability (rainfall and/or underground water) which determine the amounts of feed prior and during the reproductive cycle which affects the reproductive and productive performance of goats.

It could concluded that livestock production is the main means of livelihood in the studied area and the importance of farm activities varies from region to region and largely determined by ecological and economic factors.

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Assiut J. Agric. Sci., 50 (4) 2019 (64-72) *ISSN: 1110-0486*
Website: www.aun.edu.eg/faculty_agriculture/journals_issues_form.php E-mail: ajas@aun.edu.eg

دراسه مقارنه بين محافظتى الوادى الجديد واسيوط فى الصفات الإجتماعيه الإقتصاديه وتكوين القطيع لنظام زراعة المحاصيل/ الثروة الحيوانية لصغار المربيين

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الملخص

تم تصميم هذا البحث لدراسة الصفات الإقتصاديه الإجتماعيه وتكوين القطيع لنظام زراعة المحاصيل/ الثروه الحيوانيه لصغار المربيين. وتم تجميع البيانات لتوضيح تفهم الزراعةِ عُموماً وإنتاج المجترات. وتم تجميع البيانات الأولية فى هذه الدراسة باستخدام استبيانات مسبوقة الإختبار. وتم بناءاً عليه تجميع بيانات من ٧٠ مربى من ٧ قرى من الخارجه وهى الجزائر، بولاق ، ناصر الثوره ، بورسعيد، شركه ٥٥ ، الخرطوم و صنعاء وأيضا ٧٠ مربى من ٧ قرى من الغنايم بأسيوط وهى المشايعه، أولاد محمد، العزايزه، دير الجنادله، العذبة الجديده وعزبة الدويك. وتم إختيار المواقع من هذه الدراسه الخارجه والغنايم عشوائياً ليتم مشاركتهم فى هذه الدراسه.

أوضحت الدراسة أن المربيين يقتنوا أنواع حيوانيه خليطه. وكانت الأبقار تمثل معظم نشاط المربيين. فى محافظة الوادى الجديد كان متوسط عمر٦١,٤% من المربيين بين عمرى ٤٢ و ٦٠ عام أما فى نفس المرحلة السنيه فى محافظة اسيوط كانت النسبه ٥٥,٧ %. وكان توزيع المربيين المتزوجين كان ٩٤,٢٩ و ٩١,٣٤ % متزوجون بينما ٥,٧١ % و ٢,٨٦ % كانوا غير متزوجين فى محافظتى الوادى الجديد وأسيوط على الترتيب.

وبالنسبة للمربيين الغير متعلمين ، ويقرأ ويكتب، والتعليم الإبتدائى، والإعدادى والثانوى والتعليم الجامعى كان ٢٧,١٤، ٠,٠٠، ١,٤٣ ،٧,١٤ ، ٥٤,٢٩، ١٠,٠ % فى محافظة الوادى الجديد على الترتيب بينما كان ٤٨,٥٧، ٧,١٤ ، ٠,٠٠ ، ٤,٢٩ ، ٢٧,١٤ ، ١٢,٨٦ % في محافظة أسيوط على الترتيب. وكان معدل القراءة والكتابه فى الوادى الجديد وأسيوط ٧٢,٨٦ % ، ٥١,٤٣ % على الترتيب. وكان البعض من المستجيبين وحاصلين على التعليم الأساسى والتعليم الإعدادى والمدارس العليا والخريجين أو بدون تعليم كانوا ١,٤ ، ٧,١ ، ٥٤,٣ ، ١٠,٠ ، ٢٧,٢ % على الترتيب. فى محافظة الوادى الجديد. بينما كانت ٧,١ ، ٤,٣ ، ٢٧,١ ، ١٢,٩ ، ٤٨,٥ % فى أسيوط على الترتيب.

وكان أفراد العائلة المشاركين فى الأنشطة الزراعية يمثل ١٠٠,٠ % من الذكور. بينما كانت نسبة العمالة فى المجال الزراعى ٣٢,٨٦ % و ٣٤,٢٩ % بالنسبة للمجترات الكبيره و٣٣,٣٣ % و٣٢,٣٨ % بالنسبة للمجترات الصغيره فى محافظتى الوادى الجديد وأسيوط على الترتيب. وكانت نسبة المجترات التى يمتلكها صغار المربيين ٦٧,٣٢ % من الماشيه و ١٨,٦٣ % من الأغنام و ١٤,٠٥ % معز و٠,٠ % جاموس بينما كانت ٥٢,٥٤ ماشيه و٢٧,٥٤ أغنام و٣,٨١ معز و ١٦,١٠ % جاموس فى محافظتى الوادى الجديد وأسيوط على التوالى.

كان معظم معوقات الإنتاج الحيوانى تتمثل فى ٨,٥٧ % تغذيه ، ٢٨,٥٧ و ٢١,٤٣ أمراض و الإنتاجية الضعيفه على الترتيب. ثم تأتى صعوبة التسويق ونقص فى الربحيه حيث كانت ٣٥,٧١ % و٥,٧١ % فى محافظة الوادى الجديد. بينما فى محافظة أسيوط كانت النسبة ٤٤,٢٩ % راجعة للتغذيه والأمراض وضعف الإنتاجيه ٣٥,٧١ و١٢,٨٦ وضعف الأربحيه ٧,١٤ % وبدون صعوبه فى التسويق.

وبمكن أن نستنتج من ذلك أن الإنتاج الحيوانى يعتبر المصدر الرئيسى للإعاله فى المنطقة التى تمت دراستها وأهمية الأنشطه المزرعيه التى تتباين من منطقه لأخرى ويتحكم فيها بقوه العوامل البيئيه والإقتصاديه.