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OPPORTUNITIES AND CONSTRAINTS TO SUSTAINABLE AGRICULTURAL DEVELOPMENT IN EGYPT AND THE NEED FOR EFFECTIVE EXTENSION SERVICE

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ABSTRACT

The main objective of this study was to identify and discuss different opportunities and constraints to sustainable agricultural development in Egypt. The paper identified and described different aspects and changes in the Egyptian agriculture and their effect on agricultural sustainability in Egypt. It presented the development in land tenure system, encroachment on agricultural land, the development of number of extension personnel, and the development in educational levels of farmers and rural people. The paper emphasized the role of and the need for effective extension services to achieve sustainable agricultural development in the country.

The study depended mainly on secondary data collected from Central Administrations for Agricultural Economics, Land Protection, and Agricultural Extension at the Ministry of Agriculture in Cairo and the Central Agency for Public Mobilization and Statistics to obtain necessary data. These were in addition to results of previous research.

While improvement in educational levels of rural people, and the great revolution in Information Communication Technology (ICT) were considered as opportunities for sustainable agricultural development, changes in land tenure system, encroachment on agricultural land, decreasing number of extension personnel, changes occurred in some farmers' characteristic, and climate change were among constraints to sustainable agricultural development in the country.

Great efforts are needed by the agricultural extension system to utilize such opportunities and face various constraints to sustainable agricultural development in Egypt.

Keywords: ***Agricultural sustainability, Egypt, encroachment on agricultural land, Land tenure system.***

INTRODUCTION

There is a great need to increase agricultural production and achieve agricultural development in Egypt to meet increasing demands for food due to the high rate of population growth and the limited agricultural land resources. Several aspects and changes occurred in the Egyptian agriculture stand as barriers to achieve sustainable agricultural development in Egypt. First: there has been a chronic problem concerning smallness and fragmented land holdings and continuous decrease in the average farm size as a result of continuous increase in the number of land holders. Second: there has been reliance on intensive use

of external inputs such as chemical fertilization, pesticides, chemical control of weeds and insects. This intensive use of external inputs along with the adoption of many wrong practices caused harm effects on agricultural land resources and environmental pollution. Third: the encroachment on agricultural land to construct houses and buildings which caused spatial changes in rural areas over all the whole country and represented a serious problem which needs urgent decisions. Fourth: changes in farmers' characteristic as a result of improving their level of education and changes occurred in their main professions. Fifth: changes occurred in the agricultural extension system and the continuous decline in the number of extension personnel in the country. Sixth: changes occurred in the cropping systems and farmers' transformation to certain crops on the expense of other more important crops for the country. Seventh: changes in irrigation water supply during certain periods of time.

Some kinds of these aspects and changes have positive effect on agricultural sustainability; others have negative effect. The main objective of this study is to identify these changes and their expected effect on agricultural sustainability and the need for effective extension services to achieve sustainable agricultural development in Egypt.

Strategies have been set up and implemented to achieve agricultural development in Egypt. The first strategy was prepared in the 1980's. This strategy dealt mainly with liberalization of the agricultural sector, pricing and increasing the annual growth rate of agricultural production. The second strategy was prepared in the 1990's and concentrated on the completion of the economic reform in the agricultural sector, increasing agricultural exports, and increasing the annual growth rate of agricultural production. The third strategy was prepared to achieve agricultural development towards 2017. It concentrated on achieving self sufficiency in cereals, increasing the annual growth rate of agricultural production, and continuing land reclamation (Ministry of Agriculture, A. R. of Egypt, 2009).

A new strategy has been prepared lately for sustainable agricultural development in Egypt towards 2030. This strategy aims at achieving sustainable use of agricultural natural resources, increasing the productivity of both the land and water units, raising the degree of food security of the strategic food commodities, increasing the competitiveness of agricultural products in local and international markets, improving the climate for agricultural investment, improving the living standards of the rural inhabitants, and reducing poverty rates in the rural areas (Ministry of Agriculture, A. R. of Egypt, 2009).

The 2030 strategy emphasized the protection of agricultural land and improving the livelihood of rural population. It also emphasized the need for developing agricultural extension policy in the country. The strategy included different procedures and implantation mechanisms to achieve its objectives (Ministry of Agriculture, A. R. of Egypt, 2009).

2. SUSTAINABLE AGRICULTURE

The sustainability concept was considered from a broad perspective and associated with a lot of economic, social, and environmental conditions. Sustainability is defined as: "the use of natural resources, development and protection at the rate and manner which allow us meet the needs of current generations as well as future generations" (Tryens and Silverman, 2000). The World Commission on Environment and

Development (WCED) defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Rao, and Rogers, 2006; Cox and Cusick 2006).

Sustainable agriculture is a management philosophy and system providing for agricultural needs of current and future generations. It utilizes "management practices that are profitable, environmentally sound, and beneficial to society" (Ball, and Popiel, 2007). Sustainable agriculture refers to an agricultural production and distribution system that: (a) achieves the integration of natural biological cycles and controls, (b) protects and renews soil fertility and the natural resource base, (c) optimizes the management and use of on-farm resources, (d) reduces the use of nonrenewable resources and purchased production inputs, (e) provides adequate and dependable farm income, (f) promotes opportunity in family farming and farm communities, and (g) minimizes adverse impacts on health, safety, wildlife, water quality, and the environment (Boone, et.al, 2007). It challenges educators and farmers to think about the long-term implications of practices and the broad interactions and dynamics of agricultural systems (Boone, et.al, 2007). The farming system is unsustainable "if natural resources such as soil, nutrients and water are used up at a rate faster than they are replenished" (NOVA, 2009).

As stated by Blumenthal (2017), sustainable agricultural development is a dynamic process. This means that the level of sustainability at any time or place determines the pace of progress and the results at any time becomes the bases for the next phase of development. It should also be economically viable, socially acceptable, politically desirable, and environmentally integral (Blumenthal, 2017; Abubakar and Attanda, 2013).

Sustainable agricultural development particularly in the developing countries is faced by several constraints. Among these constraints are: absence of economic incentives for farmers to adopt sustainable agricultural practices, lack of awareness among people at different levels, inadequate research facilities, absence of accurate information on agricultural resources, and non availability of appropriate research methodology (Blumenthal, 2017).

Research studies have been conducted on agricultural sustainability in Egypt. Abdel-Maksoud and Abdel-Salam (2011) developed a framework to measure agricultural sustainability in Egypt. The framework included a number of social, economic and environmental indicators depending upon indicators used for the same purpose in England, Italy, Venezuela, and Australia, in addition to indicators included in the environmental sustainability index. They also identified agricultural sustainability practices based on the developed framework and research results and examined farmers' perception and adoption of these practices in Assiut governorate, Egypt. Results showed positive trends towards agricultural sustainability in Egypt according to most economic indicators and negative trends according to most social and environmental indicators. Results also showed low levels of farmers' knowledge and adoption of many agricultural sustainability practices. It was recommended that immense efforts to be devoted to encourage farmers to adopt agricultural sustainability practices concerning these social and environmental dimensions to maintain agricultural sustainability in Egypt.

Shalaby et al., (2011) in their study showed that the Egyptian agriculture faces many threats and challenges which, in turn, impacts rural development initiatives. The prominent challenges include land and water issues; old cultivation techniques; lack of information on marketing; poverty; degradation of natural resources and environmental issues; population growth; inadequate support services; framework and institutional constraints; and lack of agricultural and rural development policies.

Soliman, (2015) in his study, tried to diagnose the challenges facing sustainable agricultural development in Egypt. The analysis examined six dimensions, trade trends with an emphasis on agricultural trade; rural poverty indicators and causes, degradation of agricultural resources (soil and irrigation water), agricultural labor employment in relation to migration and the technological packages adopted, public health criteria, and educational indicators. The final section was allocated for a profile of the strategy towards rural development

3. OBJECTIVES

The main objectives of this study were to: (1) Identify and discuss different opportunities and constraints to sustainable agricultural development in Egypt. (2) Identify and discuss different aspects and changes in the Egyptian agriculture. (3) Describe the effect of these changes on agricultural sustainability in Egypt. (3) Describe the role of and the need for effective extension services to achieve sustainable agricultural development in the country.

4. METHODOLOGY

This study depended mainly on secondary data collected from different sources. Data concerning the development in land tenure system were gathered from results of the agricultural census at the Central Administration of Agricultural Economics at the Ministry of Agriculture through the period 1960 – 2010. Data concerning the encroachment on agricultural lands were obtained from records at the Central Administration for Land Protection at the Ministry of Agriculture through the period 1983 – 2017. Data concerning the development of agricultural extension personnel in the country were obtained from records at the Central Administration for Agricultural Extension at the Ministry of Agriculture through the period 2008 – 2016. Data concerning the development in educational level were obtained from public census for population in Egypt through the period 1966 – 2017. These were in addition to results of previous research.

5. OPPORTUNITIES FOR SUSTAINABLE AGRICULTURAL DEVELOPMENT

There are two important aspects which can be used to accelerate and maintain sustainable agricultural development in Egypt. These are the improvement in educational levels of rural people and the great development in Information Communication Technology (ICT). The results of the population census through the period 1976 to 2017 showed an improvement in educational levels of rural people. These results showed a continuous decrease in percentages of illiterate population in rural areas. They declined from 70.4% in 1976 to 32.2% in 2017. These percentages were lower for males and also for the total country. The results of these cinsus also showed an increase of those who were holding from average level of educational qualification to university and higher degree. They increased from 2.8% in 1976 to 36.8% in 2017 (Table 1).

Results of 2017 census showed that over 65% of population used mobile and about 29% of them used computer and internet (Table 2).

Effective agricultural extension services are needed to make use of these aspects of development to maintain sustainable agricultural development in the country through the use of developed and effective communication methods.

6. CONSTRAINTS TO SUSTAINABLE AGRICULTURAL DEVELOPMENT

There are different aspects and changes in the Egyptian agriculture which can be regarded as constraints to sustainable agricultural development in Egypt. Of these are: smallness and fragmented land holdings, changes in some farmers' characteristics particularly their main and secondary professions, encroachment on agricultural lands for nonagricultural purposes, continuous decline in the number of extension personnel, intensive use of external inputs, environmental pollution, and climate change. These constraints will be presented as follows.

6.1. SMALLNESS AND FRAGMENTED LAND HOLDINGS

According to 2010 agricultural census, the majority of agricultural holdings in Egypt (91.8%) were less than five feddans and 97.6% of holdings were less than ten feddans (Table 3). There had been continues increase in the proportion of small and very small holdings since 1960 until 2010. The percentage of holdings less than one feddan increased from 26.4% in 1960 to 48.3% in 2010. The average holding size for holdings less than ten feddans had declined from 2.23 feddan in 1960 to 1.39 feddan in 2010 (Table 3). These changes were probably due to inheritance which has led to more and more division of holdings over time. The effect of this problem on sustainable agricultural development can be reduced by adopting land consolidation and crop rotation. This needs, besides effective extension services, changes in agricultural laws and legislations.

6.2. CHANGES IN FARMERS' CHARACTERISTICS

The present author has conducted previous research on spatial and socio-economic change in farmers' characteristics in an Egyptian village (Abdel-Maksoud, 2013, 2014, and 2016). The results of these research studies have shown different kinds of change occurred in the village and its farmers' characteristics. In a study carried out on agricultural land holders of that village in 1977, it was found that farming was the main profession of all farmers interviewed. In a recent survey carried out on 1312 land holder of the same village in 2016, it was found that only one fifth of them were taking agriculture as their main profession. The majority was governmental employees, working at private sectors, or having their own small enterprises and was taking farming as a secondary profession. Such changes in the main profession of land holders may have negative effects on agricultural sustainability due to the absence of more experienced farmers who work fully engaged in their farms (Table 4).

6.3. ENCROACHMENT ON AGRICULTURAL LANDS

Data in Table 5 show the development of encroachment on agricultural land in Egypt for nonagricultural purposes through the period 1983 t0 2017. It can be seen that there has been a large number of cases of encroachment and a large areas encroached on of agricultural land particularly since January

revolution. It should be noted that the formal estimates of encroachment on agricultural lands are far below the actual estimates. In a case study carried out by the present author on encroachment on agricultural land in an Egyptian village, it was found that there was a great difference between formal estimates and actual encroachment. The latter greatly exceeded formal estimates. It was found also that removals were never implemented or completed, and sanctions against encroachment were never adopted (Abdel-Maksoud, 2014).

6.4. CONTINUOUS DECLINE IN THE NUMBER OF EXTENSION PERSONNEL

Table 6 presents the development of the number of extension personnel during the last nine years. The data showed great decline in these numbers. The number of extension personnel in 2016 was 41% of that number in 2008. The number of village extension workers has declined from 3417 in 2008 to 792 in 2016. The decreasing number of extension personnel and the increasing number of land holders have lead to a great increase in the work load of extension personnel. According to 2010 agricultural census, the total number of land holders in Egypt was 4439532, and the total area of land holdings was 9730786. This means that the individual person of extension personnel should be responsible for 1520 land holder, and an area exceeds 3331 feddan of land.

6.5. USE OF INTENSIVE EXTERNAL INPUTS

The Egyptian agriculture depends heavily on the intensive use of external inputs such as chemical fertilizers and pesticides. Deterioration of the agricultural environment is witnessed by the decrease in the area of highly fertile soils (class A land), high groundwater table, pollution of irrigation water as a result of irrational use of fertilizers and pesticides (Abou-Mandour & Abdel Hakim, 1995). The intensive use of external inputs and technological improvements in plant and animal production although have increased agricultural production, but they have caused widespread ecological damage and a growing negative impact on human health. New technologies have led the agricultural sector to tremendous growth but have also resulted in soil depletion, pollution of groundwater and in increasing economic instability and other social costs (Seada et.al., 2016).

6.6. CLIMATE CHANGE

Climate change is defined by the Australian Academy of Science as a change in the average pattern of weather over a long period of time, typically decades or longer (Australian Academy of Science, 2015). It has impacted agriculture and is expected to further impact food production. Some studies have attempted to anticipate these impacts and provide projections of these impacts in the Egyptian agriculture (El-Ramady, et.al., 2013; Abdalla and Yunsheng, 2015; Abdel-Zhaher, 2015).

Climate change will impact agriculture in different ways: shift in climatic and agriculture zones, impact on agricultural soil, effect on soil organic matters and soil fertility, effect on biological health of soil, soil erosion, reduced soil water availability, impact on soil processes, salinization and alkalization, pest, diseases and weeds, impact on plant growth, and impact on crop production (El-Ramady, et.al., 2013: 68). The impacts of climate change have major effects on agricultural production, with a decrease in output of certain crops and increased variability of yields to the extent that important changes may need to be made by primary producers.

There are two alternative ways to face climate change, namly: adaptation and mitigation. While adaptation manages the impact of climate change, mitigation includes all means to reduce its causes. A wide array of adaptation options is available, but more extensive adaptation than is currently occurring is required to reduce vulnerability to climate change. Among adaptation option/strategy in agriculture: adjustment of planting dates and crop variety; crop relocation; improved land management, e.g. erosion control and soil protection through tree planting.

Among Key mitigation technologies and practices: Improved crop and grazing land management to increase soil carbon storage; restoration of cultivated peaty soils and degraded lands; improved rice cultivation techniques and livestock and manure management to reduce CH4 emissions; improved nitrogen fertilizers application techniques to reduce N2O emissions; dedicated energy crops to replace fossil fuel use; improved energy efficiency; improvements of crop yields (IPCC Fourth Assessment Report, 2007).

These issues of climate change need effective extension services to diffuse awareness among farmers and rural people of them and encourage them to adopt adaptation and mitigation methods.

7. THE NEED FOR EFFECTIVE EXTENSION SYSTEM

There is a great need for effective agricultural extension system to make use of these opportunities and aspects of development; and to face these constraints to maintain sustainable agricultural development in the country. The improvement in educational levels and the development in ICT can be used for the application of more developed and effective extension communication methods. Different measurements are required to face constraints to sustainable agricultural development in Egypt. These measurements need an effective agricultural extension system for their implementation (Table 6).

8. CONCLUSION

Different kinds of changes have occurred in the Egyptian agriculture. Some of these changes can be regarded as improvements; others are constraints to sustainable agricultural development in the country. While improvement in educational levels of rural people, and the great revolution in Information Communication Technology (ICT) were considered as opportunities for sustainable agricultural development, changes in land tenure system, encroachment on agricultural land, decreasing number of extension personnel, changes occurred in some farmers' characteristic, and climate change were among constraints to sustainable agricultural development in the country.

Great efforts are needed by the agricultural extension system to utilize such opportunities and face various constraints to sustainable agricultural development in Egypt.

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Table 1: Distribution of Rural Population in Egypt (10 years and more) according to their level of education through the period 1076 – 2017 (Percentages)

Year	Illiterate	Read and write	Below average	Average	Above average	University and higher	Not known
1976	70.35	17.05	7.70	2.33	0.12	0.47	1.97
1986	61.19	20.08	9.47	7.13	0.51	1.25	0.36
1996	49.56	17.86	16.14	12.76	1.38	2.26	0.04
2006	Not available						
2017	32.16	11.14	19.83	28.17	1.92	6.79	0.00

Source: Source: Calculated from results of Public Census for Population Central Agency for Public Mobilization and Statistics, different Issues.

Table 2: Percentages of Population in Egypt (4 years and more) who used ICT in 2017

Year	Mobile	Computer	Internet
Urban	75.92	42.84	42.78
Rural	58.91	21.00	20.32
Total	65.43	29.17	28.92

Source: Central Agency for Public Mobilization and Statistics, 2017.

Table 3: Average holding size, and percentages of holdings less than one, five, and ten feddans through the period 1960 - 2010

Year	Average * holding size (feddan)	Percentages of holdings less than		
		One feddan	Five feddans	Ten feddans
1960	2.23	26.4	84.1	94.5
1980	1.91	32.3	90.1	97.1
1990	1.81	46.5	91.6	96.6
2000	1.57	43.5	90.4	96.7
2010	1.39	48.3	91.8	96.7

Source: Computed from data in the Appendix.

*** This average was computed for holdings less than 10 feddans.**

Table 4: Distribution of land holders in an Egyptian village according to their main profession in 1975 and 2016

Main occupation	1975[(1)]		2016[(2)]	
	Number	%	Number	%
Farmer	106	100.0	268	20.4
Others (governmental employee, working at private sector, private work, … etc.)	-	0.0	1044	79.6
Total	106	100.0	1312	100.0

Sources:

Abdel-Maksoud, B. M. (1977), page 156.

Questionnaires (2016).

Table 5: Encroachment on agricultural lands in Egypt through the period 1983 – 2017

Year	Number of cases	Area	Number of removals	Area
1983 – 24/1/2011	-	103267	-	58426
25/1/2011 – 31/12/2011	287569	11967	18544	1163
2012	365332	15562	45328	2684
2013	331842	14761	38552	2065
2014	276498	12869	69835	4244
2015	194992	9002	97293	5046
2016	176166	8123	79326	4403
1/1/2017 – 1/10/2017	136835	6324	71713	4133
Total		181875		82164
%				45.2

Source: Records of the Central Administration for Land Protection, Ministry of Agriculture, Cairo.

Table 6: Number of extension personnel in Egypt through the period 2008 - 2016

Year	Director	Inspector	Specialist			Village extension worker	Total
			Governorate	districts	Extension centres		
2008			645	2223	836	3417	7121
2009			645	2223	836	3417	7121
2010	100		635	2231	803	3414	7183
2011			598	2506		3274	6378
2012			598	2506		3274	6378
2014	27	212	562	1440		2130	4371
2016	27	213	383	1506		792	2921

Source: Record of the Central Administration for Agricultural Extension, Ministry of Agriculture, Cairo.

Table 7: Required measurements and the role of agricultural extension to maintain sustainable agricultural development in Egypt

Opportunities and Constraints	Required measurements and the role of extension
Opportunities	
1. Improvement in educational levels **2. Development in ICT**	**Make use of these opportunities through the application of more developed and effective extension communication methods**
Constraints	
1. Smallness and fragmented land holdings	**(1) Consolidation of land use through changing agricultural legislations.** **(2) Adoption of crop rotation.** **(3) Diffuse awareness of the importance of the above measurements and encourage formers for their adoption.**
2. Encroachment on agricultural lands	**(1) Take necessary steps and measurements to stop this phenomenon.** **(2) The application of Agricultural laws and legislations concerning this problem.** **(3) Diffuse knowledge and awareness among people on this problem.** **(4) Encourage people to avoid this encroachment for the sake of future generations.**
3. Continuous decline in the number of extension personnel	**(1) Take necessary steps to support the extension organization with required human and material resources.** **(2) Allow private sector to provide extension services to create a completion between public and private sectors.**
4. Use of intensive external inputs	**(1) Diffuse knowledge and awareness among farmers of the proper amounts of chemical fertilizers and pesticides needed for different agricultural crops.** **(2) Encourage formers for their adoption.**
5. Climate change	**(1) Diffuse knowledge and awareness among rural people on this problem, its causes and future effects.** **(2) Determine adaptation practices to climate change.** **(3) Diffuse knowledge and awareness among rural people on these adaptation practices.** **(4) Encourage rural people to adopt these adaptation practices to avoid the harm effects of climate change.**

Appendix

Distribution of land holders according to size of holding and number of plots through the period 1960 – 2010*

Size of holding (Feddan)	1960			1980			1990		
	Number of holders	Number of plots	Area (Feddan)	Number of holders	Number of plots	Area (Feddan)	Number of holders	Number of plots	Area (Feddan)
Less than one	434219	651153	211155	796394	1067832	399357	1050900	NA**	508145
1 -	385901	676513	505325	623851	1295863	830134	713808	NA	941139
2 -	286804	802711	647912	472994	1224742	1073066	502061	NA	1137402
3 -	174595	547820	566407	223179	640523	722383	239057	NA	776601
4 -	99722	343409	423622	107442	337856	458592	111165	NA	474349
5 -	170019	667744	1100669	117974	383766	652419	139584	NA	771244
7 -				55274	207311	445806	59342	NA	478795
10 -	56705	275094	742619	32944	125746	383116	42808	NA	494898
15 -				13801	56671	230146	18124	NA	298810
20 -	23811	145461	689267	12561	53215	294970	16786	NA	387145
30 -				8044	37766	297925	10502	NA	383258
50 -	6424	45578	429952	3091	16189	194545	4520	NA	287585
1 00 -	3960	39044	905911	859	5559	650005	1622	NA	909803
500 -	-	-	-	-	-	-	-		-
1000 and more	-	-	-	-	-	-	-		-
Total	1642160	4194527	6223839	2468408	5453039	6632464	2910279		7849174

Source: Results of Agricultural Censes, Ministry of Agriculture, Cairo, different issues.

Appendix (continued)

Size of holding (Feddan)	2000			2010		
	Number of holders	Number of plots	Area (Feddan)	Number of holders	Number of plots	Area (Feddan)
Less than one	1615590	1883210	722311	2143888	2360251	923638
1 -	881085	1538228	1117148	1068634	1620312	1322103
2 -	516926	1111936	1154210	531455	961591	1177899
3 -	239106	574923	768793	230359	450257	736218
4 -	107389	276220	453512	99302	199055	416973
5 -	169064	383734	920131	170336	304316	922730
7 -	65362	185413	521512	60993	124316	485445
10 -	57236	156117	654599	66006	122917	749341
15 -	24322	72133	394955	24704	48726	398018
20 -	21661	62782	4932711	23516	43764	531345
30 -	11910	40184	439916	12027	22693	429660
50 -	5654	20345	357120	5425	10314	332043
1 00 -	2686	10277	941056	2456	3972	413590
500 -	-	-	-	218	291	138225
1000 and more	-	-	-	213	295	753558
Total	3717991	6315502	8928535	4439532	6273070	9730786

Source: **Agricultural Censes, Ministry of Agriculture, Cairo, different issues.**

*** The agricultural census was not done in 1970 because of war.**

**** NA = Not Available**

الفرص والعقبات للتنمية الزراعية المستدامة في مصر والحاجة إلي خدمة الإرشاد الفعال

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الملخص :

يهدف هذا البحث إلى الوقوف على الفرص والقيود التى تواجه الاستدامة الزراعية فى مصر. وتعرض الورقة مختلف المظاهر والتغيرات التى حدثت فى الزراعة وتأثيراتها على استدامة التنمية الزراعية فى مصر. وتعرض الورقة تطور نظام حيازة الأراضى الزراعية، والتعديات عليها، وتطور أعداد العاملين بالجهاز الإرشادى، وتطور مستويات التعليم بين الريفيين. وتؤكد الدراسة على أهمية وجود خدمات إرشادية فعالة لتحقيق التنمية الزراعية المستدامة فى مصر.

ولقد اعتمد البحث على بيانات ثانوية تم الحصول عليها من الإدارة المركزية للإقتصاد الزراعى، والإدارة المركزية لحماية الأراضى الزراعية، و الإدارة المركزية للإرشاد الزراعى بوزارة الزراعة، والجهاز المركزى للتعبئة العامة والإحصاء بالقاهرة. هذا بالإضافة إلى نتائج البحوث السابقة.

وفى حين أعتبر التطور فى مستويات التعليم، وثورة تكنولوجيا المعلومات والاتصال فرصا لتحقيق التنمية الزراعية المستدامة فى مص، فإن التغبرات التى حدثت فى نظام حيازة الأراضى الزراعية، والتعديات الصارخة عليها، والتناقص المستمر فى أعداد العاملين بالجهاز الإرشادى، والتغيرات فى خصائص الزراع، والتغيرات المناخية ، والتلوث البيئى، وغير ذلك من التغيرات تعد بمثابة قيود أومحددات تواجه التنمية الزراعية المستدامة فى البلاد.

كلمات دالة: **التعديات على الأراضى الزراعية - الزراعة المستدامة - مصر - نظام حيازة الأراضى الزراعية.**