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Training needs of agricultural extension workers in the field of organic agriculture in Matrouh Governorate

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Abstract:

The goal of the study was to establish the training requirements for agricultural extension agents in respect to the various methods utilized in organic agriculture, such as agricultural processes, pesticide alternatives, organic fertilizers, biological control, and biofertilizers. To become familiar with the most common extension training approaches used by agricultural extension agents for organic agriculture training, and to determine the relationship between the factors analyzed and the degree of expertise of agricultural extension agents in the field of organic agriculture, as well as to identify the issues that agricultural extension agents have when helping farmers in the field of organic agriculture. The total number of agricultural extension agents in Matrouh Governorate was 129, and a sample size of 96 extension agents, representing 74.4 percent of the total comprehensive, and with the same percentage, the number of extension agents was chosen in a random and regular manner from each center as follows: 56 extension agents from Matrouh Directorate of Agriculture, 7 extension agents from Matrouh administration, 13 extension agents from Hamam administration, 4 extension agents from El Alamein's administration, 5 extension agents from Barani administration, 4 extension agents from Siwa administration, 4 extension agents from El Dabaa administration, and 3 extension agents from Al-administration Najila. The field data were collected using a personal interview questionnaire form in the months of March and April 2021, after a preliminary test (Pretest) was conducted on 10 respondents from the Directorate of Agriculture in Matrouh to check the form's validity and breadth of respondents' understanding. The data was analyzed using a computer program (SPSS), arithmetic mean, and Pearson's simple correlation coefficient (R), and the results were presented in tabular form using frequencies, percentages, and percentage of the mean.

Keywords: training needs, agricultural extension agents, organic agriculture, organic fertilizers, biological control, and biofertilizers.

The most important findings are as follows:

1. Half of the respondents (50%) have a high training need in organic agriculture (130 points or more), 37.5 percent have a medium training need in organic agriculture, and the remaining 12.5 percent have a low training need in organic agriculture. This indicates a high degree of training need for agricultural extension agents in the field of organic agriculture, which necessitates holding training courses.
2. Biological control ranked top with a percentage of (90%), followed by biological fertilizers with an 87 percent, and organic fertilizers with an 87 percent (81 percent), Alternatives to pesticides came in fourth with a percentage of 79.5 percent, while the level of training needed for agricultural extension workers was average for the methods of basic

operations, which came in fifth with a percentage of 74%, and finally, the cultivation of resistant plant varieties came in sixth with a percentage of 64%. (71.5 %).

3. The lack of farmers' conviction in organic agriculture and their belief in the inevitability of using chemicals to increase agricultural productivity, which ranked first with a rate of (98.5 %), and weak communication channels between research centres, agricultural extension agents, and farmers, which ranked second with a rate of (98 %), are the most significant problems facing agricultural extension agents when guiding farmers in the field of organic agriculture (95.5 %).

4. Rejection of the statistical hypothesis that "there is no significant relationship between the extension agents' training needs in the field of organic agriculture as a dependent variable and each of the following studied independent variables: age, academic qualification, academic specialization, work experience, number of courses, benefit from the courses, space in supervised, and degree of job satisfaction," and the approval of the statistical hypothesis that "there is no significant association between the mentors' training needs in the field of organic agriculture as a dependent variable and each of the analyzed independent variables: origin, and distance from the workplace"

The research problem and its introduction:

Egypt is one of the countries where food production does not keep up with population expansion because population growth rates always outpace agricultural production growth rates. Egypt's population increased from 18.97 million in 1947 to around 83.6 million in 2012, at a time when the per capita share of agricultural land decreased from about 0.30 acres in 1947 to about 0.11 acres in 2012, and despite the country's efforts to increase agricultural land, agricultural land erosion and loss were often equal to the total reclaimed land in Egypt. (Central Agency for Public Mobilization and Statistics, August 2015 - http://www.capmas.gov.eg) due to the loss of more than 750 thousand acres of the best agricultural land in the Delta and Lower Egypt over the second part of the last century.

As a result, the government is very interested in the agricultural sector and is making continuous efforts to expand the agricultural area in order to meet the steady population increase, but the per capita share of the cultivated area is still decreasing, and the food bill still represents the largest share of Egypt's imports, despite the increase in the agricultural area from 5.2 million acres in 1950 to around 8 million acres today, the per capita share of the cultivated area is still decreasing, and the food bill still represents the largest share of Egypt's imports (Allam et al., 2001: p. 2).

Due to the critical and successful role it plays in economic activity, the agriculture sector is one of the most important sectors in the Egyptian economy. Due to its potential and development possibilities, it is also regarded as the primary pillar of growth, development, and wealth. It is a large field that expands and gives everything needed for thorough development if the latest scientific discoveries are utilized. Due to the advent of contemporary and advanced technological methods, this sector has seen significant growth in recent years, resulting in increased productivity of acres of most agricultural crops. (National Specialized Councils, 1990: pg. 4)

It's also regarded as one of the country's most important leading sectors, as it works through integrated strategies to achieve sustainable agricultural development that meets social, economic, and political needs, with an impact on increasing agricultural development rates, increasing crop productivity, increasing exports, expanding the area of reclaimed lands, maximizing the use of agricultural waste, and rationalizing the use of agrochemicals. Organic agriculture is one of the most important current environmental principles that has been introduced to agricultural development. The Ministry of Agriculture, through its various bodies, has been interested in organic agriculture in the fields of agricultural research and production in order to achieve self-sufficiency in the export of some commodities with specifications accepted by the global market because they are chemical-free, making them safe for individual health and reducing the problem of commodity pollution. (Hussain and others, 2004: pg.1)

Whereas, in the absence of organic agriculture, intensive farming systems employ enormous

amounts of mineral fertilizers, herbicides, and fungicides, polluting the soil and water, and hence plants and animals. Pesticides have been studied for a variety of negative effects on humans, including but not limited to:

According to the Benbrook report, published in 1996 (by the World Health Organization in 1990), there are approximately 3 million cases of acute human poisoning with pesticides worldwide each year, with 220,000 cases of fatal infection, while poisoning cases in the United States of America, as estimated by The American Association of Poison Treatment Places, totaled 110,000 cases per year.
Pesticide use has been linked to both acute and chronic impacts, according to WHO and UNEP reports from 1989. Based on animal studies, the International Agency for Research on Cancer found substantial evidence of cancer caused by 18 pesticides, while there was limited evidence of cancer caused by 16 pesticides.
Studies have shown that pesticides have an influence on the human immune system, causing testicular dysfunction, which diminishes fertility and increases infertility in males who have been exposed to pesticides. After researching 225 men from an area in Argentina known for its fertility and investigating their lives, medical histories, employment, and the extent of their pesticide exposure, as well as submitting them to biological and physical testing, the researchers revealed that pesticide exposure, herbicides and fungi reduced men's capacity to produce children by causing low sperm counts and high levels of two types of female sex hormones in comparison to men who were not exposed to these substances.. (http://www.khosoba.com/)

According to this logic, the expansion of organic farming programs is achieved through the systematic use of organic fertilizers, biofertilizers, and biological resistance, which leads to the preservation and improvement of soil fertility, the production of food that is safe for human health, and the reduction of pollution. In order to enhance the level of living, achieve a better life for the rural population, and reduce the food gap, officials in the agricultural sector have focused their emphasis on bringing about Comprehensive Agricultural Development in Egypt and modernizing it. (Mahrous, and Wahba, 1996: p.8).

To achieve this, agricultural production should be promoted and modernized by shifting from traditional and inherited production methods to new methods and systems that include modern agricultural techniques, as well as the adoption of balanced agricultural policies that aim to achieve high rates and achieve a surplus of agricultural production meeting the needs and desires of the population. (Nihal Shukri, 1996: p. 14).

However, despite the efforts of the country's agencies to promote agricultural development in general, and particularly in Matrouh Governorate, because its agriculture is still characterized by primitive traditional methods, the rates of agricultural development are almost intangible, despite its incomparable advantage in the production of some crops. (Bulletin of Agricultural Economics, 2013: p.332).

This necessitates a greater focus on training agricultural extension agents, as there is no doubt that the success of agricultural extension in completing the tasks assigned to them reflects the success of the entire agricultural extension system in achieving its objectives; because agricultural extension's work with extension agents and proximity to them makes them aware of their surroundings. Farmers in their working area, whether in terms of their issues, interests, requirements, habits, values, or human and material resources, assure the effectiveness of developing and implementing extension programs based on the needs, desires, and values of the farmers and the recipients' capacities (Al-Sayyad and Sharshar, 1986: p.126).

The human factor and the material element are both important in the agricultural growth process. The material element represents the result of scientific and technological progress in the field of agricultural production sciences, which can only be used effectively if the human element has the necessary capabilities and skills to apply these advanced scientific means and requirements in the production process.

As a result, scientific investment in agriculture is the most basic and direct tool for moving from traditional to modern agriculture development, and agricultural extension, as an educational process, must pay special attention to developing the knowledge structure of extension agents in order to guide farmers' behavior, which is the main goal of extension work. It is vital to

train these extension agents to make them more efficient and capable of the task they undertake in order to prepare them for continuous employment and to keep them at the needed service level. (Hafez, 1990: p.11)

Training is regarded one of the essentials required for agricultural development, since it allows trainees to gain knowledge, skills, and trends that will make them more efficient and qualified for the work they do. (Antar and Al-Filali, 1988: p.67)

Extension agents must participate in determining their training needs in order for the training process to accomplish its desired objectives in terms of preparing them with a decent degree of proficiency in completing the many responsibilities allocated to them. (Shady, 1999: p.3)

The significance of agricultural extension in the development of the human element in newly created areas stems from the fact that it is one of the most important and distinguished non-formal educational systems that works to bring about desirable behavioral changes in the knowledge, skills, and attitudes of the people in these areas in order to push the wheel of economic development forward and increase its rates because these behavioral changes are valuable in and of themselves and lead to Ot. (Omar and others, 1971: p.11)

Agricultural extension work's ability to perform its role in this field is determined by the efficiency and skills of its workers, particularly at the local level (agricultural extension agents), which are determined in light of the educational experiences and training provided to them before and during their practice of extension work. (Al-Safti, 2008: p. 23)

Agricultural extension agents must give farmers with information, skills, and positive attitudes in the field of organic farming in order to achieve the required behavioral changes in their knowledge, skills, and attitudes to reduce the use of chemical pesticides and fertilizers. Some studies on training needs in research-related areas revealed that agricultural extension agents had significant training needs in biological resistance strategies for the use of pesticides (pathogenic nematodes, growth regulators and molting hormones, castration of male insects, pathogenic bacteria, disrupting pheromone, and sex attractant pheromone). Agricultural extension agents' typical training needs for these methods were (95.5 %, 94 %, 92.5 %, 89.5 %, 83 %, and 81.5 %, respectively). (Mohammed and others, 2016: p.359)

Agricultural extension agents require extensive training in the integrated management of fruit flies, which is currently lacking (pathogenic nematodes, growth regulators and molting hormones, castration of male insects, pathogenic bacteria). (Mohammed and others, 2020: p.8-9)

The use of pheromones has increased by 88.5 %, and biological control has increased by 87.8 %, while the use of the forecast and early warning system has increased by 70 %, while each of the resistant plants has increased by 60 %, pesticide alternatives by 55 %, and agricultural operations have increased by 60 % (51.%). (Mohammed and others, 2016: pg.2682)

Due to a dearth of research that addressed the training needs in the field of organic agriculture, as well as the present motivation of extension bodies to encourage farmers to use organic agriculture technical techniques, which rely heavily on the knowledge and abilities of agricultural extension agents. As a result, it was necessary to determine the training needs of agricultural extension agents in technical practices for the application of organic agriculture until they could educate farmers, provide them with information, and provide them with skills, particularly in regard to the use of agricultural processes, pesticide alternatives, organic fertilizers, and biological controls, until they could educate, provide information, and provide them with skills, especially in regard to the use of agricultural processes, pesticide alternatives, organic fertilizers, and biological controls.to modify their attitudes toward clean agricultural production, environmental safety, and health, in order to assist in the development of specific training programs in this field based on the actual needs of extension agents. As a result, the researchers decided to conduct this study in order to answer the following questions in relation to the prior research problem:

1. What kind of training do agricultural extension agents require for the various organic farming approaches, such as agricultural operations, pesticide alternatives, organic fertilization, biological control, and biofertilizers?

2. What are the most essential extension training approaches for organic agriculture training that agricultural extension agents prefer?
3. What are the most pressing issues that agricultural extension agents face while advising farmers on organic agriculture?
4. What is the link between the analyzed factors and the level of organic agriculture expertise among agricultural extension workers?

Research Objectives:

The following objectives could be given in relation to the previously presented research problem:

Identifying the training needs of agricultural extension agents in organic agriculture's many methodologies, such as agricultural operations, pesticide alternatives, organic fertilization, biological control, and biofertilizers.
1. Identifying the most significant extension training approaches for organic agriculture training that agricultural extension agents like.
2. Identifying the challenges that agricultural extension agents face while advising farmers on organic agriculture.
3. Establishing a link between the researched factors and the level of organic agriculture expertise held by agricultural extension agents.

Research hypotheses:

The following research hypothesis was developed to achieve the fourth goal: There is a significant relationship between the training needs of agricultural extension agents in the field of organic agriculture as a dependent variable and each of the studied independent variables: age, educational qualification, academic specialization, upbringing, distance to the workplace, work experience, number of courses and benefit from the courses, and the area covered.

Procedural definitions:

- **Training Needs in the Field of Organic Agriculture:** This refers to the dearth of organic agriculture knowledge among agricultural extension agents who were studied.
- **Organic agriculture:** This refers to an agricultural production system that relies on agricultural processes, pesticide alternatives, organic fertilizers, biological control, and biofertilizers to replace any chemical components.

Research area: The northwestern coast of Marsa Matrouh governorate is considered one of the most important new and promising areas in the field of horizontal agricultural development, as it is one of the Republic's largest governorates in terms of area, extending approximately 450 km from Burj Al Arab to the Libyan border and with a depth of up to 400 km. (Matrouh Governorate, "Tourist Guide": 2004, p.4).
The majority of it is cultivable, with more than half a million acres already planted, and practically all of its cultivated areas rely on rainwater irrigation (except for Siwa, Hammam, and the irrigated part of El Alamein). Marsa Matrouh, the governorate's capital, lies 286 km of Alexandria and 240 km from the Egyptian-Libyan border.
The governorate is divided into eight administrative centers: Al-Hammam, Al-Alamein, and Al-Dayaa are located east of the capital city of Marsa Matrouh, at distances of 226.5 km, 184 km, and 138 km, respectively; Al-Najila, Sidi Barani, and Salloum are located west of the capital city of Marsa Matrouh, at distances of 75 km, 126 km, and 215 km, respectively; and The governorate has a total of 129 agricultural extension agents, who are spread throughout the agricultural departments of the implementing canters. Table. 1.

Table .1: The overall number of agricultural extension agents working at the level of agricultural departments in the Matrouh Governorate's canters, as well as the number of extension agents represented in each center's research sample

Administration	Total number of agricultural extension agents	The number of extension agents in the study's sample

Directorate of Agriculture in Matrouh	75	56
El-Hammam administration	17	13
Matrouh Administration	9	7
El-Alamein Administration	6	4
El-Prani management	7	5
Siwa Administration	5	4
El-Dabaa management	6	4
El-Nigella management	4	3
Total	129	96

Source: Personnel Affairs data for the year 2021 at the Directorate of Agriculture in Matrouh.

The sample of a comprehensive study:

The comprehensive research was represented by the entire number of agricultural extension agents in the Matrouh Governorate, which was 129, and the sample size of the respondents was determined using the Krejcie & Morgan equation with knowledge of the comprehensive size. (1970: p.607-610), Consequently, after using this equation, the sample size required was 96 extension agents, or 74.4 % of the total, and the same percentage, the number of extension agents was randomly selected from each center as follows: 56 extension agents from Matrouh Directorate of Agriculture, 7 extension agents from Matrouh administration, 13 extension agents from El-administration, Hammam 4 extension agents from El Alamein's administration, 5 extension agents from El-administration, Barani 4 extension agents from Siwa administration, 4 extension agents from El- Dabaa administration, and 3 extension agents from Nigella administration. Table .1.

Data collection:

The field data was collected using a personal interview questionnaire during the months of March and April 2021, after a preliminary test (Pretest) was conducted on 10 respondents from the Directorate of Agriculture in Matrouh to check the form's validity and breadth of respondents' understanding.

First: The following are the most important independent variables:

Procedure definitions and quantitative data treatment for the study's most important independent and dependent variables: Academic qualification: It refers to the extension agent's highest academic qualification at the time of data collection. This variable was assessed by questioning the respondent about his highest level of education. The counsellors were classified into three categories based on their qualifications (intermediate, university, and post university), and were assigned the numbers 1, 2, and 3 based on their responses.

Academic specialization: It refers to the academic specialty of the extension agent who was polled. The agricultural extension agents who were polled were separated into two categories based on their academic expertise (agricultural extension - other specialties) and assigned the numbers 1, 2 according to their responses.

The degree of benefit from attending training courses on organic agriculture: This variable was assessed by asking the agricultural extension workers interviewed about the level of benefit they received from taking these courses on a three-point scale (low benefit - medium benefit - high benefit). The numbers 1, 2, and 3 were assigned to these responses, correspondingly.

Degree of job satisfaction: It refers to a range of psychological, occupational, and

environmental aspects that contribute to an employee's job satisfaction. In order to measure this variable, a scale was used that consists of 12 statements, each of which is responded to on a triple scale: (agree, to some extent, disagree), and these responses were given the numbers 3, 2, 1 in the case of positive statements, and vice versa in the case of negative statements, and by summing the scores obtained by the respondent from the units of the scale, a total score that expresses the individual's emotional responses can be obtained by adding the scores obtained by the minimal level of job satisfaction was 18 marks, with a maximum of 36 marks. As a result, the surveyed agricultural extension workers were split into three categories based on their level of job satisfaction: "low job satisfaction (less than 24 marks) - medium job satisfaction (24- 30 marks) - high job satisfaction (more than 30 marks).

Secondly: the dependent variable:

Agricultural extension agents in the field of organic agriculture require the following training: A component scale was used to assess the training needs of agricultural extension agents in each of the studied methods of organic agriculture (cultivation of disease-resistant plant varieties, agricultural processes, pesticide alternatives, organic fertilizers, biological control, and biofertilizers). It is divided into two categories: need (2) and don't need (1). The following are the results of the respondents' scores in each of them:

Cultivation of disease-resistant varieties: The respondents' perspectives on the need for information about the preparation and use of disease-resistant plant types, which is one sub-process, were polled. Plant kinds that are pest-resistant must be cultivated (diseases - insects) and must meet the minimum (1) and maximum (2) requirements (2) As a result, the responses were split into three groups: low need (less than one mark), medium need (one mark to less than two marks), and high need (two marks to more than two marks) (2 marks or more).

- **Agricultural operations:** The respondents' opinions were surveyed about their need for knowledge related to the preparation and use of agricultural operations in (4) sub-operations, namely (early farming, hoeing, burying wood, and weeding perennial weeds) through four phrases, with the minimum reaching (4) and the maximum reaching (8) with a theoretical range of (4), and the respondents were divided into three levels: low need (less than 5 marks), medium need (5 marks- less than 7 marks), and high need (7 marks and above (7 marks or more).
- **Pesticide alternatives:** The respondents' opinions were surveyed about their need for knowledge about the preparation and use of alternatives to pesticides in (6) sub-processes, namely (the use of aluminum sulfate (alum saffron), the use of agricultural sulfur, the use of diesel, the use of beer yeast and molasses, the use of return oil, and the use of neutral soap) through 6 phrases, with the minimum being (6) and the maximum being (12) with a theoretical range of (6) and (10 marks or more).
- **Organic fertilizers:** The respondents' opinions were surveyed about their need for knowledge related to the preparation and use of the various types of organic fertilizers for each of (municipal fertilizers, compost industrial organic fertilizers, green fertilizers, and poultry semolina) through (21 phrases), with the minimum being (21) and the maximum being (42) with a theoretical range of (21), and the respondents were divided into three levels: low need (less than 28 marks), medium need (less than 28 marks), and high need (more than 28 marks) (35 marks or more).
- **Biological control:** The demand for training in the knowledge connected to the employment of biological control methods, such as pipe pheromones and spraying (jamming pheromone), capsule pheromone (sexual attractants), pathogenic bacteria, pathogenic nematodes, and male insect castration, was surveyed. The minimum was (15) and the maximum was (30) through 15 phrases, with a theoretical range (15), and the respondents were split into three levels: low need (less than 20 marks), medium need (20 marks - Less than 25 marks), and high need (more than 25 marks) (25 marks or more).
- **Biological Fertilizers:** The respondents' views on the necessity for training in the knowledge and application of several types of biofertilizers (Blugin, Micropine, Phosphorine, Cereline, Nitropin, Al-Aqdin, and Escorin) were gathered through 31 phrases, with the minimum (31) and maximum (31) being used (62). The respondents were categorized into three tiers

based on their notional range of (31): low need (less than 41 marks), medium need (41 marks - fewer than 51 marks), and high need (51 marks - less than 51 marks) (51 marks or more).

- **Total training requirements in the field of organic agriculture:** The total result of the three studied methods was gathered to express the degree of total need for training in the field of organic agriculture, with a theoretical range of (78), and the respondents were divided into three levels: low need (less than 104 marks), medium need (104 marks - less than 130 marks), and high need (more than 130 marks) (130 marks or more).

The respondents' mean score, which represents their training needs in each of the researched methods, was computed by dividing the respondent's marks in that method by the overall score's maximum marks. When the percentage of the average training needs of the respondents was multiplied by 100, the training need could be divided into three levels: a high training need (more than 75 % or more), a medium training need (more than 50% but less than 75%), and a low training need (50 % or less).

Third: descriptive data:

1- Agricultural extension agents recommend the following training approaches for organic agriculture training: With regard to the extension training methods preferred by agricultural extension agents for training in the field of organic agriculture, it was measured by asking respondents about six training methods, namely (workshops, practical explanation, extension seminars, discussions, lectures, and field visits) on a two-level graded scale, which is (preferred and not preferred), and grades were given 2, 1 for these responses, respectively.

2- Issues faced by agricultural extension agents when guiding farmers in the field of organic farming: a scale consisting of 9 statements was used on a two-level graduated scale (yes, no), and the scores were given 2, 1, for these responses, respectively. They were arranged according to the mean, and the percentage of the mean was calculated.

Statistical Analysis Tools:

The arithmetic mean and Pearson's simple correlation coefficient (R) were utilized in the computer's analysis of the data using the statistical program (SPSS), and the results were shown in the tabular image using frequencies, percentages, and the percentage of the mean.

The results and their discussion:

First: Personal, professional, and socio-economic variables:

- **The results of Table .2: showed the following:**

1. **Age:** Approximately two-fifths of agricultural extension agents (40.6 percent) are 46 years old or older, while 31.3 % are in the age bracket (36-45 years), and slightly over a quarter (28.1 %) are under 36 years old. These findings show that the respondents' average age is 41.7 years, which is the age when mental maturity, vigor, and the ability to learn, work, and move are at their best, therefore these respondents are predicted to play a stronger guiding role.
2. **Academic qualification:** Almost two-thirds of the surveyed extension agents (64.6%) have a high qualification, whereas just over a third (35.4%) have an average qualification, indicating that a considerable number of agricultural extension workers have a high qualification. As a result, they should be better equipped to educate and absorb new information in agriculture, as well as play a larger leadership role.
3. **Academic specialization:** About three-fifths of the respondents (57.3 percent) are not specialized in agricultural extension, indicating that a big percentage of the respondents require agricultural extension work to improve their efficiency and degree of qualification for work. Guidance by providing training in extension tactics, communication skills, and persuasion so that they may better deal with farmers and their families.
4. **Upbringing:** More than half of the respondents (55.2%) grew up in the country, whereas more than two-fifths of the respondents (44.8%) grew up in the city. Rural upbringing, without a doubt, aids the agent's understanding of many of the conditions and issues of rural agriculture, as well as its stability; being near to his work.
5. **Distance of the workplace from the place of residence:** The distance between the surveyed agricultural extension agents' workplace and their place of residence ranged from 0.5 to 30 km, with an average of 8.6 km. It

was discovered that roughly three-quarters of the surveyed extension agents (72.9 %) have their place of residence within a distance of less than 10 km from their workplace, while about one-fifth (20.8 %) live within a distance of 10 to less than 20 km from their workplace, and only (6.3 %) live within a distance of less than 20 km The respondents do not commute a long distance between their workplace and their home. It may make it easier for them to be consistent in their daily extension work practice and follow-up.

6. **Years of work experience in the extension work:** The length of functional experience in extension work ranged from one year to 24 years, with an average of 10.81 years. And that a quarter of the extension agents (25%) had worked in the field for 8 to 16 years, while those who had worked in the field for 16 years or more accounted for only 44.8 % of the total agricultural extension employees polled, indicating that The findings revealed that a substantial number of the counsellors polled had extensive expertise in extension work, which supports the governorate extension efforts.

7. **Number of organic agriculture training courses attended by respondents:** The number of training courses attended by respondents ranged from zero to ten, with a mean of 2.23 and a standard deviation of 2.46. It was discovered that about one-fifth of extension agents (19.8%) did not attend any training courses on organic agriculture, while more than half of the respondents (58.3%) have attended one to three courses in this field, and (11.5 %) of the respondents have attended more than three courses in this field. These findings show that the majority of surveyed agricultural extension workers attended fewer than four organic agriculture training courses during their service period, indicating that the extension body provides a limited number of organic agriculture training programs to the surveyed extension agents. More work needs to be done to increase the number of training courses available to the surveyed extension agents in this field.

8. **The level of benefit from attending training courses on organic agriculture:** (9.1%) of extension agents who attended organic agriculture training courses saw little advantage, while slightly more than three-fifths of counsellors questioned (62.33%) saw average benefit. These classes were well-attended, and a little more than a quarter of the counselors polled (28.57 %) said they had gotten a lot out of them. The participation in these classes, those in charge of selecting, preparing, organizing, and implementing extension work training bear responsibility because they failed to recognize the importance of evaluating the training process to determine its strengths and weaknesses in order to improve the level of benefit from those courses.

9. **The area of agricultural control supervised by the surveyed extension agents:** The actual extent of the reins monitored by the surveyed extension agents ranged from zero acres to 505 acres, with an arithmetic average of 139.5 acres. Two-thirds of the respondents (67.66%) supervise an area of less than 167 acres, while a quarter of the respondents (25%) supervise an area of more than 167 acres (167 acres - to less than 334 acres), Although the scope of supervision does not appear to be large, the annual decrease in the number of guides due to leaving the service (retirement age) makes this scope always increasing, as the job burdens of those who left the extension service are distributed to their fellow workers, so attention must be paid to hiring guides and work on preparing new cadres to take responsibility for the extension service.

10. Degree of job satisfaction: The findings revealed that (5.3 %) of respondents have poor job satisfaction (less than 24 marks), (34.3 %) have medium job satisfaction (24-30 marks), and (61.4 %) have high job satisfaction (greater than 24 marks) (more than 30 marks).

Table (2): Distribution of the surveyed agricultural extension agents according to the categories of personal and professional variables

Personal characteristics		Number	%
1. Age	Under 36 years old	27	28.1
	36 - less than 46 years old	30	31.3
	46 years and over	39	40.6

	Total	96	100.0
2. Academic qualification:	Average	34	35.4
	University	62	64.6
	Total	96	100.0
3. Academic specialization	Agricultural extension	41	42.7
	Other specialties	55	57.3
	Total	96	100.0
4. Upbringing	Rural	53	55.2
	Urban	43	44.8
	Total	96	100.0
5. Distance of the workplace from the place of residence	Less than 10 km	70	72.9
	10 - less than 20 km	20	20.8
	20 km or more	6	6.3
	Total	**96**	**100.0**
6. Years of work experience in the extension work	Less than 8 years	29	30.2
	8 - under 16 years	24	25
	16 years and over	43	44.8
	Total	**96**	**100.0**
7. Number of training courses attended by respondents on organic agriculture	No courses	19	19.8
	1 - less than 4 courses	56	58.3
	4 - less than 7 courses	11	11.5
	7 courses or more	10	10.4
	Total	**96**	**100.0**
8. The level of benefit from attending training courses on organic agriculture	Low benefit	7	9.10
	Average benefit	48	62.33
	High benefit	22	28.57
	Total	**77**	**100**
9. The area of agricultural control supervised by the surveyed extension agents	Less than 167 acres	64	66.67
	167 - Less than 334 acres	24	25.00
	334 acres or more	8	8.33
	Total	**96**	**100.0**
10. Degree of job satisfaction	Low (less than 24 marks)	5	5.3

	Average (24-30 marks)	33	34.3
	High (30 marks or more)	58	61.4
	Total	**96**	**100.0**

Source: Compiled and calculated from the questionnaire

Second: Dependent variable:

Training needs of agricultural extension agents in the field of organic agriculture: The following three dimensions were used to assess the training needs of agricultural extension agents in the field of organic agriculture:

The level of total training need for the surveyed agricultural extension agents in the field of organic agriculture: The results, as shown in Table.3: show that half of the respondents (50%) have a high training need in the field of organic agriculture (130 marks or more), while 37.5 % have an average training need, and the remaining 12.5 % have a low training need in the field of organic agriculture, indicating a high degree of training need for agricultural extension agents in the field of organic agriculture.

Table (3): Distribution of respondents according to the level of total training need in the field of organic agriculture

The level of the total training needs in the field of organic agriculture	**Number**	**%**
High need (130 marks or above)	48	50
Average need (104-below 130 marks)	36	37,5
Low need (less than 104 marks)	12	12.5
Total	96	100

Source: Compiled and calculated from the questionnaire

The training needs of the respondents related to the different and studied methods of organic agriculture: Table (4) shows that the respondents have a high level of training needs in relation to the studied methods of organic agriculture (cultivation of disease-resistant plant varieties, agricultural operations, pesticide alternatives, organic fertilizers, biological control, and biofertilizers), as follows:

- **Cultivation of disease-resistant plant varieties:** It was shown that (23.96 %) have a high level of training need, (42.71 %) have an average level of training need, and the rest (33.3 %) have a low level of training need.
- **Agricultural operations:** It was discovered that (40.62 %) have a high level of training need, (43.75 %) have an average level of training need, and the rest (15.63 %) have a low level of training need.
- **Alternatives to Pesticides:** According to the findings, 51% of respondents have a high level of training demand, 32.3 % have a medium level of training need, and the remaining 17.7 % have a low level of training need.
- **Organic fertilizers:** The results show that (54.17%) have a high level level of training demand, (33.33 %) have an average level of training need, and the remaining (12.5 %) have a low level of training need.
- **Biological control:** According to the findings, (67.71%) have a high training requirement, (25 %) have an average training demand, and the remaining (7.29%) have a low training need.
- **Biofertilizers:** According to the findings, (61.46 %) have a high training requirement, (29.16 %) have a medium training need, and the rest (9.38 %) have a low training demand.

The findings show that agricultural extension agents require training in the majority of the researched organic farming systems, and that specialized training programs for agricultural extension agents on these approaches are

required. And the extension body's coordination with organic agriculture research bodies as well as non-governmental organizations working in this field to obtain private information about organic farming technical practices and make it available to farmers in a way that is commensurate with their ability to reduce pollution and produce safe, environmentally friendly crops.

Table (4): Distribution of respondents according to their level of training needs for organic farming methods

Organic agriculture methods	The level of training need for the surveyed agricultural extension agents	Number	%
1. Cultivation of disease-resistant plant varieties	High need (2 marks or more)	23	23.96
	Average need (1 - less than 2 marks)	41	42.71
	Low need (less than 1 mark)	32	33.33
	Total	**96**	**100**
2. Agricultural operations	High need (7 marks or more)	39	40.62
	Average need (5 - less than 7 marks)	42	43.75
	Low need (less than 5 marks)	15	15.63
	Total	**96**	**100**
3. Alternatives to Pesticides	High need (10 marks or more)	49	51
	Average need (8 - less than 10 marks)	31	32.3
	Low need (less than 8 marks)	17	17.7
	Total	**96**	**100**
4. Organic fertilizers	High need (35 marks or more).	52	54.17
	Average need (28 - less 35 marks)	32	33.33
	Low need (less than 28 marks)	12	12.5
	Total	**96**	**100**
5. Biological control	High need (20 marks or more)	65	67.71
	Average need (20 - less than 25 marks)	24	25
	Low need (less than 20 marks)	7	7.29
	Total	**96**	**100**
6. Biofertilizers	High need (51 marks or more)	59	61.46
	Average need (41- less than 51 marks)	28	29.16
	Low need (less than 41 marks)	9	9.38
	Total	**96**	**100**

Source: Compiled and calculated from the questionnaire

Third: Percentages of average training needs for agricultural extension workers in the examined technical ways of organic farming, and the studied methods were organized on the basis of the average proportion as follows:

Technical methods for basic operations in organic farming: The results in Table .5: showed that there was a high level of training need for agricultural extension agents in relation to basic operations, with biological control taking first place (90 %), bio-fertilizers in second place (87 %), organic fertilizers in third place (81 percent%), and alternatives to pesticides in fourth place (80 %) (79.5 %), While the level of training needed for agricultural extension agents was determined to be average in respect to the methods of fundamental operations, agricultural operations came in fifth position with (74 %), and the cultivation of resistant plant types came in sixth place with (71.5 %).

Technical methods related to the sub-processes in organic agriculture: As shown in Table (5), there was a high level of training need for agricultural extension agents in relation to the technical methods of the sub-processes, with pipes pheromone and spraying coming in first place with (95 %), Capsules (sexual attractants), pathogenic bacteria, and pathogenic nematodes coming in second place with (90 %), and Blugin coming in third place with (90 %), Micropine and phosphorine (88%) were in fourth place, followed by ceraline (87.5%), Nitropin, Aqdin, and Industrial organic fertilizers (86%), and Escorin (85.5%). Castration of male insects (85%) was in seventh place, and the use of exhausted oil (84.5%). and the use of neutral soap with (82 %), beer yeast and molasses with (80.5 %), municipal fertilizers with (80 %), aluminum sulfate with (77 %), and poultry and the use of diesel with (76 %), while the level of training needed for agricultural extension agents was found to be average for the methods. where weeding perennial weeds came in fourteenth place with (75%), hoeing came in fifteenth place with (74.5%), early cultivation came in sixteenth place with (73.5%), wood burial came in seventeenth place with (73%), and pest-resistant plant varieties (diseases - insects) came in last place with (73%). (71.5 %).

Table (5): Percentages of the average marks of training needs of the respondents in the technical methods of organic agriculture

Technical methods for organic agriculture	Technical methods for sub-processes in organic agriculture	Average	%	Training need level	Rank
1. Cultivation of resistant plant varieties	Planting varieties resistant to pests (diseases - insects)	1.43	71.5	Average	18
	Total	1.43	71.5	Average	6th
2. Agricultural operations	1- Early cultivation	1.47	73.5	Average	16
	2- hoeing	1.49	74.5	Average	15
	3- Burying wood	1.46	73	Average	17
	4- Removing perennial weeds	1.50	75	High	14
	Total	1.48	74	Average	5th
3. Alternatives to pesticides	1- Use of aluminum sulfate	1.54	77	High	12
	2- Use of agricultural sulfur	1.50	75	High	14
	3- Use of diesel	1.52	76	High	13

	4- Using beer yeast and molasses	1.61	80.5	High	10
	5- Use of exhausted oil	1.67	84.5	High	8
	6- Use a neutral soap	1.64	82	High	9
	Total	1.58	79.5	High	4th
4. Organic fertilizers	1- Municipal Fertilizer	1.60	80	High	11
	2- Industrial organic fertilizers	1.72	86	High	5
	3- green fertilization	1.64	82	High	9
	4- Poultry waste	1.52	76	High	13
	Total	1.62	81	High	3rd
5. Biological control	1- pipe pheromone and spray	1.90	95	High	1
	2-capsules (sexual attractants)	1.80	90	High	2
	3- pathogenic bacteria	1.80	90	High	2
	4- pathogenic nematodes	1.80	90	High	2
	5- castration of male insects	1.70	85	High	7
	Total	1.8	90	High	1st
6. Biofertilizers	1- Bluegin	1.76	88	High	3
	2- Micropine	1.76	88	High	3
	3- Phosphorine	1.76	88	High	3
	4- Cereline	1.75	87.5	High	4
	5- Nitropine	1.72	86	High	5
	6- Aqdin	1.72	86	High	5
	7- Escorin	1.71	85.5	High	6
	Total	1.74	87	High	2nd

The percentage of the total number of respondents was 96, and the maximum score was 2.

These findings indicate that most organic agriculture systems require a high or average level of training, which must be considered when developing and executing training programs for agricultural extension agents working in the field of organic agriculture.

Fourth: descriptive data:

1- Training methods preferred by agricultural extension agents for training in the field of organic agriculture: Table .6: Workshops were ranked first with a percentage of (97.9%) and an average of (1.97), Practical explanation was second with a percentage of (97.5%) and an average of (1.95), field visits were third with a percentage of (94.5%) and an average of (1.89), discussions were fourth with a percentage of

(93.5%) and an average of (1.87), and lectures were fifth with a percentage of (92.5%) and an average of (1.87).

Table (6): arrangement of the training methods preferred by agricultural extension agents for training in the field of organic agriculture

Training methods	Average	%	Rank
Field visits	1.89	94.5	3
Practical clarification	1.95	97.5	2
Extension seminars	1.78	89.0	6
Discussions	1.87	93.5	4
Lectures	1.85	92.5	5
Workshops	1.97	98.5	1

The percentage of the total number of respondents was 96, and the maximum score was 2.

2- Issues that agricultural extension professionals encounter when advising farmers on organic agriculture: The data in Table.7 show that the most pressing issue confronting agricultural extension workers when guiding farmers in the field of organic agriculture is farmers' skepticism of organic agriculture and their belief in the inevitability of using chemicals to boost agricultural productivity, as it ranked first (98.5 %), Then there's the issue of weak channels. The problem of farmers' lack of awareness of the impacts of pesticides and chemical fertilizers on the environment rated third with (98 %), while communication between research centers, agricultural extension, and farmers placed second with (95.5 %),while farmers' belief in organic crops' high production costs and low yield ranked fourth (95 %), the problem of a lack of extension seminars on organic farming to educate farmers ranked fifth (94.5 %), and the problem of farmers' lack of knowledge and information about organic farming methods ranked sixth (94 %), the absence of outlets for marketing organic agricultural products ranked seventh (92.5 %), the lack of pamphlets and posters about organic farming ranked eighth (92 %), and the lack of providing the prerequisites for the application of organic agriculture ranked last (89.5 %).

Table (7): Problems facing agricultural extension workers when guiding farmers in the field of organic agriculture

Problems facing agricultural extension workers when guiding farmers in the field of organic farming	Average	%	Rank
1. Lack of farmers' knowledge and information about organic farming methods	1.88	94	6
2. Lack of extension seminars on organic farming to educate farmers	1.89	94.5	5
3. Lack of brochures and posters on organic farming	1.84	92	8
4. Lack of awareness of farmers about the effects of pesticides and chemical fertilizers on the environment	1.91	95.5	3

5. Weak channels of communication between research centers, agricultural extension, and farmers	1.96	98	2
6. Failure to provide the requirements for the application of organic farming	1.79	89.5	9
7. Farmers are not convinced of organic farming and believe in the inevitability of using chemicals to increase agricultural productivity	1.97	98.5	1
8. Farmers' belief in the high costs of producing organic crops and their low production	1.90	95	4
9. Lack of outlets for marketing organic agricultural products	1.85	92.5	7

The percentage of the total number of respondents was 96, and the maximum score was 2.

Fifth: The relationship between the degree of training needs for agricultural extension agents in the field of organic agriculture and each of the studied independent variables: There is no significant association between the training needs of agricultural extension agents in the field of organic agriculture as a dependent variable and each of the analyzed independent factors," the statistical hypothesis said. "Age, educational qualification, academic specialization, upbringing, and upbringing, distance to work, work experience, number of courses, benefit from courses, supervised area, and degree of job satisfaction." The results were clarified by utilizing Pearson's simple correlation coefficient (R) to test the validity of the hypothesis, as shown in Table (8):

1. The degree of training needs for agricultural extension agents in the field of organic agriculture, and the variables of age, where the calculated value (R = - 0.248), and work experience, where the calculated value (R = - 0.247), have an inverse significant relationship at a significant level of 0.01. the number of courses had the calculated value (R = - 0.246), and the degree of job satisfaction had the calculated value (R = - 0.253), indicating that the training needs for agricultural extension agents in the field of organic agriculture decrease as the respondent's age, work experience, and degree of job satisfaction increase.

2. There is an inverse significant link between the degree of training needed for agricultural extension agents in the field of organic agriculture and the following factors, at a significant level of 0.05: Academic qualification had a calculated value (R = - 0.192), while academic specialization had a calculated value (R = - 0189), course benefit had a calculated value (R = -0.191), and the supervised area had a calculated value (R = - 0.185). This suggests that academic qualification, academic specialty, and course benefit are all increasing. Considering the area monitored by the extension agent, agricultural extension agents' training demands in the field of organic agriculture are reduced.

3. The variables of origin and distance from the job have no significant link with the degree of training needed for agricultural extension agents in the field of organic agriculture.

4. Based on this, the statistical hypothesis that "there is no significant relationship between the degree of training needs for agricultural extension agents in the field of organic agriculture as a dependent variable and each of the following studied independent variables: age, educational qualification, academic specialization, work experience, and so on" can be rejected. The number of courses he supervises, the number of courses he uses, the amount of space he supervises, and the level of job satisfaction.

5. Acceptance of the statistical hypothesis that "there is no significant relationship between the degree of training needs for agricultural extension agents in the field of organic agriculture as a dependent variable and each of the studied independent variables: origin and

distance to the workplace as a dependent variable."

Table (8): shows the values of the correlation coefficients for the relationship between the degree of extension agents' knowledge and each of the studied variables

The studied independent variables	Pearson's simple correlation coefficient (R) values.
1. Age	- 0.248**
2. Qualification	- 0.192*
3. Academic specialization	- 0.189*
4. Foundation	0.106
5. Distance away from the workplace	0.108
6. Experience in work	- 0.247**
7. number of courses	- 0.246*
8. Benefit from the courses	- 0.191*
9. Supervised area	- 0.185*
10. Degree of job satisfaction	- 0.253**

**** Significant at (0.01)** *** Significant at (0.05).**

Recommendations:

- In light of the findings of this study, extension officials should develop and implement training programs for agricultural extension agents on various organic agriculture methods, based on the study's training needs and related to the most in-demand technical methods, in order to improve agricultural extension agents' knowledge, skill, and technical level. And offer them all the knowledge they require to fill in the gaps in their expertise in this field, allowing them to give farmers with the necessary information to use organic farming methods, while taking into account the training methods favored by agricultural extension agents for organic agriculture training.
- The study also suggests that the relationship between agricultural extension agents, research centers, and farmers be strengthened in order to disseminate information and educate farmers about the benefits of organic farming and the negative effects of chemical fertilizers and pesticides on humans and the environment, by holding intensive counselling seminars in this field and providing more experienced organic agriculture trainers.
- The need to hire more agricultural extension workers while also training new cadres to take over the governorate's extension operations.
- The importance of planning, organizing, and implementing suggestive training in light of reviewing the training process to identify strengths and flaws in order to maximize the value of training courses.

References:

[1] The Seedling, Hani Saeed Abdel Rahman (2000): The impact of agricultural learning on the revenues of some crops in the old lands and the new desert lands, Master's thesis, Department of Agricultural Economics, Faculty of Agriculture, Alexandria University.

[2] El-Safty, Mohamed Lotfi Mohamed (2007): Training needs of agricultural extension agents in the field of endurance of some vegetable crops on cotton in the governorates of Gharbia and Beheira, Journal of Agricultural Research, Kafr El-Sheikh University, Volume 33, First Issue, March.

[3] Specialized National Councils (1990): Horizontal Agricultural Expansion, Technical Report No. (8), Cairo.
[4] Al-Sayyad, Abdel-Basit Mohamed, and Sharshar, Abdel-Hamid Amin Ali (1986), the agricultural extension agents' awareness of the problems they face when carrying out their functional extension tasks, a field study in Qalyubia Governorate, Al-Azhar Journal of Agricultural Research, No. 5.
[5] Omar, Ahmed Mohamed and others (1971), Agricultural Guidance, its Basics and Its Role in Development, Dar Al-Nahda Al-Arabiya, Cairo.
[6] Allam, Mohamed Nasr El-Din (2001): Water and agricultural land in Egypt, past, present and future, Academic Library.
[7] Hafez, Mustafa Kamal (1990): Analytical study of the level of the job performance of agricultural extension workers in Beheira Governorate, Alexandria Journal of Agricultural Agricultural Research, Volume 35, December 3 issue.
[8] J.M. A, Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Central Administration of Agricultural Economy, Agricultural Statistics, Agricultural Economics Bulletin, 2013.
[9] Shady, Sami Ali Al-Morsi (1999): Problems of extension training for agricultural extension agents in Gharbia Governorate, Research Bulletin No. 220, Agricultural Extension Research and Rural Development Institute.
[10] Sherif, Ghanem Saeed, Sultan, Hanan Issa (1983): Contemporary trends in training during the educational service, Dar Al Uloom for printing and publishing, c. NS. p.
[11] Antar, Ibrahim, Filali, Sami (1988): Reconstructing the desert and providing food, a guide for youth on desert reconstruction and the establishment of new urban communities, the Supreme Council for Youth and Sports in Egypt.
[12] Allam, Mohamed Nasr El-Din (2001): Water and agricultural land in Egypt, past, present and future, Academic Library.
[13] Mohamed, Abdo Omran, Shaaban El-Sayed, Soheir Mohamed Ahmed Elseretty (2016): Training needs of agricultural extension agents in the field of modern trends in the integrated control of agricultural pests in Sinai, Zagazig Journal of Agricultural Research, No. 43.
[14] Mahrous, Fawzi Naim, and Wahba, Ahmed Gamal (1996): The role of agricultural extension in the areas of population culture - environmental conservation - agricultural marketing, the volume of the conference of the strategy of cooperative extension work under the policy of economic liberalization, the Scientific Society for Agricultural Extension, the Egyptian International Center for Agriculture, Dokki.
[15] Directorate of Agriculture in Matrouh - records of personnel affairs for the year 2021.
[16] Nihal Shoukry (1996): "The Agricultural Investment Document during the Mubarak era," Al-Ahram Press, Qalyubia.
[17] Benbrook, C.M. (1996). Pest Management at the Crossroads Consumer Union, Yonkers, New York
[18] Hudson, r.h.; Tucker, R.K. and Haegele, M.A. (1984). Handbook of toxicity of pesticides to wildlife, U.S.fish Wild. ser.Resource Publ., No.153
[19] http://www.khosoba.com Al-Quds newspaper, website
[20] http://www.capmas.gov.eg/Pages/Publications.aspx?page_id=5104 at 2015
[21] http://www.mwri.gov.eg/project/sinai.aspx at 2015
[22] Mohammed et al (2016) (Abdou Omran/ The Action Plan for Agricultural Extension Agents in the Field of Bio-Control / International Journal of Pharm Tech Research, 2016, 9(12)
[23] Mohammed et al (2020) Abdu Omran/ Training needs assessment of agricultural extension change agents in the field of biological control of fruit fly in Sinai Peninsula / Bulletin of the National Research Center (2020) 44:144