

## Evaluating the Effectiveness of the Mesopotamia General Company for Seeds in Supplying Wheat Seeds from the Perspective of Farmers in the Nahrawan Agriculture Division/Baghdad Governorate

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### Abstract

This research aims to evaluate the effectiveness of the Mesopotamia General Company for Seeds from the perspective of wheat farmers in the Nahrawan Agriculture Division by identifying its roles in the following areas: 1- Determining seed needs. 2- Seed provision. 3- Seed purification. 4- Seed preparation. 5- Seed marketing. It also aims to understand farmers' reactions to the services provided by the company. The study also aimed to identify the extent to which agricultural extension contributes to the company's role. To achieve the research objectives, an 8-item plan was prepared, distributed across two areas: determining the need for seeds and preparing seeds. Additionally, a 9-item plan was prepared for farmers' reactions in the Nahrawan Agriculture Division, as well as a 9-item plan for the extension activities carried out by the company. Data was collected from: A) The General Company for Seeds of the Mesopotamia through personal interviews and review of reports. B) A random sample of 80 farmers from the Nahrawan Agriculture Division using a questionnaire. The research concluded that the Mesopotamia Company meets farmers' needs through: 1- Need identification: Two approaches to need identification were found: A) The central approach: According to this approach, farmers are supplied with 50 kg/day of wheat seeds, as recommended by the National Seed Council. B- The local approach: This depends on the quantity of seeds used by farmers according to the characteristics of their farming systems. The quantity of seeds used ranged from 50 to 70 kg/day, with 73.75% using a quantity of seeds ranging from 55 to 70 kg/day, due to reasons related to the characteristics of their farming systems. 2- Seed Provision: Research results showed that the company relies on two main sources for seed provision: A- Contracted seed producers: The quantity of seeds supplied to the company for the 2025-2026 agricultural season reached 90,000 tons. B- Contractors of the Higher Grade Seed Multiplication Program: The quantity of seeds marketed to the company reached 12,000 tons for the 2025-2026 agricultural season. 3- Purification: It was found that the company owns 10 purification sites with a capacity of 132,000 tons, distributed across several governorates. 4- Seed Preparation: The quantity of seeds prepared by the company for farmers for the 2024-2025 season reached 287.1 tons, covering 93.64% of the needs of the surveyed farmers. 5- Marketing: This involves receiving quantities of wheat seeds from producers contracted with the company, as well as from contractors participating in the higher-grade seed multiplication program. The research results showed that the highest numerical value for farmer satisfaction was 15, and the lowest numerical value was 3 on a three-point scale consisting of nine items, with most farmers' satisfaction ranging between low and moderate. The results also showed that the items (attending a guidance seminar and listening to a guidance radio program) achieved the highest participation rate, reaching 82.5% within a plan consisting of 9 items of guidance activities, which indicates that these items are close to the interest of the respondents, unlike the rest of the items, which recorded a weak participation rate. The research concluded that the standard used to determine the quantity of seeds needed per dunam does not always rely on modern scientific

principles that take into account the characteristics of farming systems, which leads to inaccuracy in determining the actual need of farmers for wheat seeds. The researcher recommended the need to adopt modern scientific standards in determining the quantity of seeds required per dunam, based on the recommendations of research centers and taking into account the characteristics of farming systems.

### Introduction

Food security is fundamental to human well-being and social stability. The availability, accessibility, and affordability of nutritious food represent a burden on all populations [13]. There is an urgent need to address the existing issues in the global food system, from farm to fork, which require radical improvement worldwide. Increasing inequalities in access to safe food exacerbate hunger, leading to the adoption of expensive, unhealthy diets with inadequate nutritional intake, and ultimately contributing to illness and death [12]. Indicators of progress towards achieving global nutrition goals suggest a deviation from the path to eradication. In all its forms, malnutrition persists, with billions of people still lacking access to nutritious, safe, and sufficient food. However, progress in many countries offers hope that we can get back on track to ending hunger and malnutrition. Implementing the policies, investments, and legislation necessary to reverse current trends in hunger, food insecurity, and malnutrition requires adequate funding for food security and nutrition [7]. A 2019 FAO report, published before the COVID-19 pandemic, indicated that Sustainable Development Goal 2 (Zero Hunger) would not be achieved by 2030. As a result of the significant challenges in combating food insecurity, it is worth noting that over the years the focus has shifted from (agricultural self-sufficiency) to (food security), which has become a key objective on global development agendas, especially within the Sustainable Development Goals. But the figures indicate that achieving food security is still far off. In 2023, one in 11 people in the world suffered from hunger, with some 2.33 billion people continuing to face moderate or severe food insecurity.

The Arab region is among the most affected by food insecurity, with hunger rates in 2022 reaching their highest levels since 2000. Approximately 59.8 million people in Arab countries suffered from undernourishment. This represents 12.9% of the total population, a percentage much higher than the global average of 9.2% [3]. Wheat represents the beating heart of global food security, pumping the blood of safety and stability. Without it, millions of people may find themselves at the mercy of hunger, after it has turned into a weapon of war rather than a food crop. The Russian-Ukrainian war revealed the danger of the wheat weapon, which turned into a dagger in the back of Arab sovereignty and the independence of the peoples of the region, who held their breath in fear of the repercussions of that battle on the wheat stock, which is the primary food source for the Arabs [5].

Food security in the Arab world is one of the major challenges. Despite the availability of natural and human resources, the agricultural sector in the Arab world has not achieved the targeted increase in production to meet the demand for food. The food gap has widened, and Arab countries now import about half of their needs for basic food commodities [10].

The issue of Arab food security is one of the most important issues facing the Arab world due to its direct impact on political and economic conditions and the related development decisions are increasing with the escalation of the food crisis at the global levels, especially in light of the Arab world's great dependence on food imports in a global market characterized by great fluctuations [6].

Food security in Iraq is one of the major challenges facing the country in light of

climate change. The United Nations has classified Iraq as one of the five countries most affected by climate change, and the government is struggling to provide sufficient food due to agricultural challenges and decreased productivity caused by rising temperatures and water mismanagement. Water makes food security an urgent issue that requires effective strategies and solutions. Food security means ensuring the availability of food supplies on a permanent and continuous basis for all citizens, regardless of their living standards [11]. Iraq suffers from the deterioration of the agricultural situation and a heavy reliance on imports from abroad, in addition to the failure to fully utilize its arable lands, as only (18) out of (32) million dunams suitable for agriculture are utilized, which has caused a clear decrease in the local production of wheat and barley in particular [9]. Iraq's removal from the Food and Agriculture Organization's list of countries in need of external food assistance came after securing wheat, which is one of the most important elements in the food supplies for the Iraqi citizen, as the Food and Agriculture Organization calculates the quantity of food in light of the food stock that the country possesses [2]. The process of supplying wheat to farmers is a planned and organized process overseen by governmental and non-governmental institutions. However, in Iraq, this process is primarily the responsibility of the Ministry of Agriculture, represented by the National Seed Council, which was formed under Law 52 of 2012. Among its formations are the government agricultural seed companies, which are three companies: The General Company of Mesopotamia for Seed Production, which is affiliated with the Ministry of Agriculture, the Iraqi Company, which is a mixed sector, and the Seed Technology Center, which is affiliated with the Ministry of Science and Technology. The Nahrawan Agricultural Division is one of the agricultural divisions affiliated with the Baghdad Governorate Agriculture

Directorate/Rusafa District, with a total area of 328,000 dunams. The division consists of five districts:

1. District 3, Nahrawan.
2. District 4, Hamidah.
3. District 20, Abrah.
4. District 8, Karziyah.
5. District 3, Basmaya.

The Mesopotamia General Company for Seed Production is a self-funded economic unit wholly owned by the state, enjoying legal personality and financial and administrative independence, and operating according to an economic policy. The company owns a capital estimated at (2) billion dinars, representing the company's movable and immovable assets. It is affiliated with the Ministry of Agriculture and is subject to all laws and regulations. The company is managed by its board of directors, which is the highest authority and is responsible for formulating and setting the general policies for the necessary and to conduct its activities, achieve its objectives, and oversee their implementation, it exercises all rights and powers related thereto and may delegate to the company's general manager any powers it deems appropriate. The company represents a link between research centers and farmers for seed production. Administrative, financial, organizational, and technical plans Important strategic crops, especially high-grade wheat seeds with specifications subject to the regulations of the Seed Testing and Certification Department, serve as a primary source for seed propagation and production, achieving high yield rates by maintaining the purity of the varieties during the cleaning and dusting process. The company owns:

- 1-(10) Sites for seed cleaning and dusting.
- 2-(13) A factory for splitting and drying yellow feed corn.
- 3-(2) Silos, each with a capacity of (50,000) tons.
- 4- (15) Centers for receiving fodder barley crop [8].

Evaluation is a continuous systematic process based on collecting data about a particular program, policy or activity, analyzing it systematically, identifying strengths and weaknesses, and determining what has been achieved of the desired goals in order to make judgments and decisions [4].

Evaluation is a fundamental tool for determining the success or failure of any organization in achieving its goals. The Mesopotamia General Company for Seeds is a key pillar in supporting agricultural development and providing inputs and services to farmers in the Nahrawan agriculture division evaluating its effectiveness is necessary to determine its ability to fulfill its mission and meet the needs of beneficiaries. Through the evaluation process, the company's strengths and weaknesses can be identified, the extent of farmers' satisfaction with its services can be revealed, and obstacles that limit its effectiveness can be identified. The process of supplying wheat seeds to farmers affiliated with the Nahrawan Agriculture Division by the Mesopotamia Company is an important process that contributes to increasing the achieved productivity and total production. Therefore, evaluating the company's effectiveness calls for the following questions: 1- What role does the company play? 2- What are the farmers' reactions to the company's role? 3- To what extent does agricultural extension contribute to achieving this role?

#### **Research objectives**

**The first objective: To identify the role played by the Mesopotamia General Company for Seeds in the Nahrawan Agriculture Division through:**

- 1- Determine the need for seeds.
- 2- Providing seeds.
- 3- Seed purification.
- 4- Preparing the seeds.
- 5- Marketing the seeds.

**The second objective: To identify the farmers' reactions to the services provided by the company.**

**Third objective: To identify the extent to which agricultural extension contributes to achieving the company's role.**

#### **Research hypotheses:**

- 1- The General Company of Mesopotamia secures the needs of the farmers of the Nahrawan Agriculture Division through its various activities.
- 2- The farmers of the Nahrawan Agriculture Division are satisfied with the services provided by the Mesopotamia General Seed Company.
- 3- Agricultural extension contributes to the services provided by the company through its various activities.

#### **The importance of the research:**

This research highlights the effectiveness of the Mesopotamia General Company for Seeds by evaluating the services it provides to farmers in the Nahrawan Agriculture Division, The research results reveal whether there are shortcomings in the services provided, and the solutions included in the recommendations to address these shortcomings contribute to increasing the achieved productivity and total output.

#### **Procedural definitions:**

process of collecting and analyzing data related to the role of the Mesopotamia General Company for Seeds in identifying and meeting the needs of wheat farmers in the Nahrawan Agriculture Division, and then issuing statements that ensure improved performance.

Effectiveness: The extent to which the Mesopotamia General Seed Company achieves its planned objectives in meeting farmers' needs for wheat seeds.

#### **Research Methodology:**

The descriptive method was used because it helps in describing the phenomenon by collecting, organizing, and presenting data.

#### **Research community**

- 1- Mesopotamia General Seed Company.
- 2- Farmers who cultivate wheat in Baghdad Governorate.

#### **Research Sample**

A simple random sample of (80) farmers was selected from the Al-Nahrawan Agricultural Division in Baghdad.

**Statistical methods:**

Percentages, arithmetic mean, and weighted average were used in analyzing the research data.

**Results and discussion**

**The first objective: To identify the role played by the Mesopotamia General Company for Seeds in the Nahrawan Agriculture Division through:**

**1- Determining the required number of seeds:**

The research results showed that the process of identifying needs is carried out through two directions:

a- Central approach: This involves determining the need for seeds based on:

-The area designated for cultivation, which is included in the agricultural plan and approved by the National Seed Council.

The quantity of seeds used per dunam. The National Council recommended adopting a quantity of 50 kg/dunam.

b- Local approach: Here, the need for seeds is determined by the farmer based on:

The total area that the farmer decided to cultivate according to his agricultural plan. The areas that the farmers surveyed in the Nahrawan Agriculture Division decided to cultivate for the 2024/2025 season ranged between 10-350 dunams, with a total area of 5740 dunams. Table 01.

Table 01 Distribution of farmers according to the area to be cultivated

Categories	number	%
10 - Less than 90	62	77.5
90 - Less than 170	9	11.25
170- Less than 250	5	6.25
250 - 350	4	5
total	80	100

From Table 01, we conclude that the majority of the farmers surveyed are smallholders ranging between (10-90) dunams, constituting (77.5), a large percentage that warrants significant attention and services In all agricultural fields, such as providing seeds, fertilizers, machinery, agricultural equipment, etc., considering that the financial return for this group is small compared to their peers who own large holdings.

- The quantity of seeds used in planting one dunam. The research results showed that the quantity of seeds used by the farmers surveyed ranged between (50-70) kg/dunam, with an average of 56.48 kg/dunam Table 02.

Table 02 Distribution of the surveyed farmers according to the quantity of seeds used per dunam

Categories kg/dunum	number	%
50 - 54	21	26.25
55 - 59	29	36.25
60 - 64	25	31.25
65 - 70	5	6.25
total	80	100

From Table 2, we observe that only 25.26% use a seed quantity equal to or close to the quantity recommended by the Ministry of Agriculture (50 kg/dunum), while 75.73% use a seed quantity ranging between 55 and 70 kg/dunum. From this, we conclude the following:

a/ The quantity of seeds specified by the Ministry of Agriculture, represented by the National Seed Council (50 kg/dunum), is not commensurate with the needs of the farmers surveyed, forcing them to resort to other sources to compensate for the shortage of seeds they have, often these seeds may be inefficient or of poor quality, which negatively affects productivity and overall production, both in quantity and quality.

b/ The Ministry of Agriculture did not take into account the characteristics of the farming systems in the Nahrawan Agriculture Division and the problems it suffers from, such as increased salinity, water scarcity, and high temperatures, while we note that the modern trend emphasizes the importance of taking all the characteristics of farming systems into consideration.

According to data from the surveyed farmers, their total cultivated area reached 6190 dunams for the 2024/2025 agricultural season. Based on the quantity of seeds used (4519 kg), the research results showed that the maximum requirement was 19.25 tons. The minimum requirement is 0.5 tons, and the total seed requirement is 306.6 tons, with an average of 3.832 tons. 87.5% of farmers have needs within the range of 0.5-9.875 tons. Table 03

Table 03: Distribution of the surveyed farmers according to their seed needs

Categories (tons)	number	%
0.5 - 5.187	62	77.5
5.188 - 9.875	8	10
9.876 - 14.563	5	6.25
14.564 - 19.251	5	6.25
total	80	100

## 2- Providing seeds:

The research results showed that Mesopotamia Company relies on two sources for supplying seeds:

a- Wheat seed producers: They are farmers elected by the agricultural people, described as large landowners, who are contracted according to a specific mechanism, whereby the company provides them with the necessary seeds of the basic or registered grade, and in return, according to the terms of the contract, they are obligated to market the seeds to the company according to the grade, field inspections are conducted at producers' fields by the Seed Testing and Certification Department of the Ministry of Agriculture. The results of the inspection showed that the producers supplied the

company with seeds of the "Registered and Certified" grade, and with the varieties Abaa 99, Buhouth 22, and Mawada. Table 04

Table 04 Quantity of seeds supplied by seed producers to Mesopotamia Company

Quantity prepare(tons)	year
126000	2024 - 2025
90000	2025 - 2026

b- Contractors of the Higher Grade Seed Propagation Program:

The program is affiliated with the Agricultural Research Department of the Ministry of Agriculture and is funded by the National Seed Council. The program aims to achieve food security by providing high-grade seeds of locally developed wheat varieties and developing the necessary infrastructure and rehabilitating all agricultural equipment and research stations and conducting scientific research and studies in order to develop and derive new varieties that can withstand the climatic changes that Iraq is going through (Agricultural Research Department: 2024). The research results showed that the program, through its research stations, supplied the Mesopotamia Company with seeds of the rank (registered and certified) and varieties of fathers 99, research 22, and affection. Table 05

Table 05 Quantity of seeds supplied by contractors of the Higher Grade Seed

Quantity prepared (tons)	year
11000	2024-2025
12000	2025-2026

## 3-Seed purification

The purification process is a crucial step in improving seed quality. Impurities and diseased seeds are removed using sifting and air separation equipment to ensure the production of high-quality seeds. The purification process is carried out under the supervision of a representative from the Seed Testing and Certification Department. Samples are taken for initial testing to

determine purity levels. Following this, the seeds undergo health testing at the Inspection and Certification Department laboratories to confirm their safety. Research indicates that the Mesopotamia Company owns 10 seed purification sites with a total processing capacity of (132,000) tons, distributed across several governorates. Table 6

Table 06: Distribution of seed purification plants according to their location and capacity

no	site	Capacity (tons)
1	Nahrawan	11000
2	Diwanayah	12000
3	Abu Gharq	10000
4	Al-Ahrar	10000
5	Al-Dour	11000
6	Al- Hawija	10000
7	Kirkuk	18000
8	Nineveh	35000
9	Al- Azizia	11000
10	Al- Medhatia	4000

From Table 06 and what preceded it, we conclude the following:

- There is an increase in the number of purification sites belonging to the Mesopotamia Company, as the number of sites was 6 in 2022 with a capacity of 56,000 tons. This indicates that the company has expanded its production activity and focused on increasing the capacity for seed purification operations.
- The level of seed efficiency is affected by the quality of the purification process and the efficiency of the workers in carrying it out. The more accurate the performance, the more positively this is reflected in the quality of the seeds.

Categories	number	%
3 - 6	25	31.25
7 - 10	46	57.5
11 - 15	9	11.25
Total	80	100

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The research results showed that the total quantity of seeds supplied by the Mesopotamia Company to the farmers surveyed for the 2024/2025 agricultural season amounted to 287.1 tons, which constitutes 93.64% of the farmers' needs. This indicates a gap between the actual needs of the surveyed farmers for wheat seeds and the quantities of seeds the seeding was supplied by the Mesopotamia Company, and this gap varies from farmer to farmer depending on the cultivated area and the quantity of seeds used. The gap ranged between 0 and 1.75 tons, with a total gap of 36.11 tons and an average of 0.451 tons. Table 07

Table 07: Distribution of farmers according to the gap between their seed needs and the quantities supplied.

Categories (tons)	number	%
0 - 0.499	54	67.5
0.5 - 0.999	15	18.75
1 - 1.499	5	6.25
1.5 - 2	6	7.5
total	80	100

#### 5-The Marketing:

The marketing process is one of the basic tasks of the Mesopotamia Company, where seeds are marketed from producers to the company, and after the purification process and laboratory tests are carried out and their safety is ensured, they are prepared for farmers for the purpose of planting.

**The second objective: To identify the farmers' reactions to the services provided by the company.**

The research results showed that the highest value for farmers' satisfaction with the services of the Mesopotamian Company was 15, the lowest was 3, and the average was 7.7 on a three-point scale consisting of (9) items. Most of the farmers surveyed had low to moderate satisfaction. Table 8

Table 08: Distribution of surveyed farmers according to their satisfaction with the services provided by the company.

From Table 08, we conclude that most of the farmers surveyed (58.75) have a low and medium level of satisfaction, which means that they feel dissatisfied with the services provided by the company for several reasons, which may be due to the quantity supplied, the supply procedures, and other reasons.

**Third objective: To identify the extent to which agricultural extension contributes to achieving the company's goals.**

The company conducts a range of extension activities to enhance the knowledge and skills of the farmers surveyed and to provide them with opportunities to learn about the latest innovations and developments. Table 9

Table 09: Distribution of surveyed farmers according to their participation in extension activities

N0	Guidance activities	Rate %
1	Attending an orientation seminar	82.5
2	Listening to an educational radio program	82.5
3	Reading a news bulletin	57.5
4	Watching an instructional television program	56.25
5	See wall stickers	56.25
6	Participation in training courses	46.25
7	Reading a guidance magazine	38.75
8	Attend a field day	15
9	Implementation of a demonstration	13.75

From Table 09, we conclude that items (1 and 2) achieved the highest participation rate, reaching (82.5%), which indicates that these activities are close to the interest of the respondents, while items (8 and 9) recorded the lowest participation rate, reaching (15%) and (13.75%) respectively, which are considered weak rates, and this

may be due to the nature of the activity or the way it was presented.

**Conclusions**

1- The standard used to determine the quantity of seeds needed per dunam does not always rely on modern scientific principles that take into account the characteristics of farming systems, which leads to inaccuracy in determining the actual need of farmers for wheat seeds.

2- The quantities of seeds supplied by the Mesopotamia General Company for Seeds are insufficient to meet the farmers' needs for seeds, forcing them to resort to other sources, the effects of which are reflected in the quality and quantity of the crop.

3- Although the two items (attending a guidance seminar and listening to a guidance radio program) achieved a high participation rate (82.5%), the remaining (7) guidance activity items suffer from a large percentage of limited participation, which affects the level of knowledge and skills of farmers.

**Recommendations**

1- Adopting modern scientific standards in determining the quantity of seeds needed per dunam, based on the recommendations of research centers and taking into account the characteristics of farming systems (soil characteristics, water sources, temperatures,.. etc).

2- The need to expand purification sites: Although the company has made efforts to increase the number of sites and raise their capacity, it needs more sites and to enhance its operational capabilities in line with the quantities of seeds produced.

3- It is necessary for the Mesopotamia Company to develop its role in the field of agricultural extension by increasing extension activities and diversifying its programs to ensure the optimal use of seeds.

4- Paying attention to and focusing on farmers' satisfaction and adopting it as a continuous evaluation tool as the main criterion for evaluating the services provided by the company.

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