

Wheat Farmers' Attitudes Towards Using Modern Technologies in Al-Alam District/Salah Al-Din Governorate

Mahmood esam suleiman

Economics and Agricultural Extension Department, College of Agriculture, Tikrit University, Tikrit, Iraq.

E-mail: mahmoodesam@tu.edu.iq

Abstract

Attitude is a central concept in social psychology, as individuals possess multiple attitudes toward themselves, others, and their surroundings. In our social lives, we strive to discover the attitudes of others and influence them to align with our own. An attitude is defined as the sum of an individual's responses to a social object or situation that affects them. The research community included all wheat farmers in the villages of Tal Al-Sibat and Al-Rabi'da, affiliated with Al-Alam District, numbering (152) farmers, after excluding the initial test sample, which amounted to (30) farmers. A random sample of 72% of the study community was selected; as a result, there were 109 farmers in the research sample. Personal interviews were used to gather data, and a two-section questionnaire created specifically for this purpose was used. The study's findings demonstrated that the attitudes of wheat farmers towards using modern technology were neutral and tended in a negative direction. and that the categories of those with negative and neutral attitudes constituted a percentage of (80.7%) of the respondents. A significant relationship between the degree of attitudes and each of the following was also found in the study: age, main family income, number of years of wheat cultivation, Type of holding, Area planted with wheat crop, sources of obtaining information, and participation in extension activities on wheat cultivation. Number of years of wheat cultivation. Additionally, the findings indicated that for the majority of the problems examined, the average problem size is considerable. Therefore, the study recommends establishing training programs to help wheat farmers become more familiar with current crop production technology so that their attitudes regarding its use are more firmly established and to convince senior farmers of the value of utilizing modern technology in crop production and service, and to implement demonstration fields and field days in wheat farming.

Keywords: Wheat Cultivation, Growers Attitudes, Modern Technologies, Agricultural Extension

Introduction and Research Problem

The goal of integrating contemporary technology into the agricultural sector is to employ contemporary scientific knowledge derived from research findings that have successfully advanced agricultural output, as well as to replace conventional patterns with contemporary ones. [1]. The degree to which farmers adopt new technology and continue to use them will determine how well they accomplish their jobs in the agricultural process [2]. Economic and social development projects are therefore seen as the creation of social change, whether that change is material, aiming to improve the technical and economic levels of society, or moral, aiming to change people's attitudes toward various issues

so that they are better prepared and, therefore, more responsive to working to improve and develop the standards of living in their local environments, and so that they become more receptive to changing their behaviour in the required manner[3]. As a result, a society's ability to advance According to FAO estimates, the world's wheat output is currently 642 million tons, but by 2050, it will need over 840 million tons. Developing nations must boost their output by 77% in order to meet this target, with a particular emphasis on vertical production development [4]. Wheat crops top the list of strategic crops in Iraq, but the production per unit area is low, representing only 40% of the

ISSN 2072-3857

global production per unit are. Achieving productivity stability also requires the advancement of agricultural research and the accumulation of experience [5]. Agricultural extension is regarded as one of the most significant tools for focused change. It may effectively develop and carry out different extension programs and result in desired behavioural changes in their knowledge, abilities, and attitudes. Farmers will eventually see an improvement in their standard of living as a result of the services they get, which will raise their income. Whatever the services offered, they are a means to greater productivity and production as well as to the advancement of agriculture overall [6]. One of the most significant tools for disseminating the knowledge and technology required for development is agricultural extension. Without an extension apparatus that can communicate information in a way that maximizes its usefulness, a robust research apparatus cannot be constructed. This information is confined and worthless without an efficient extension device [7]. Given that attitudes have an impact on the rate and effectiveness of learning, agricultural extension emphasizes the significance of attitudes in identifying farmers' motives and guiding their behaviour. Farmers who have favourable views about the knowledge they are given are more likely to retain it, whereas those who have negative attitudes are less likely to retrieve it. [8]

Numerous research in the subject of attitudes have shown the importance of trends for both society and the individual. At the societal level, sociologists think that in order to keep up with the necessary change, society must first examine its current trends and determine how suitable they are [9]. Al-Khatib also discovered that when people have favorable opinions about current technology, their use may rise. By examining patterns, we can forecast the degree to which people would embrace and accept new technologies [10]. Given that farmers make up a sizable portion of the population and play a crucial role in rural life, the researcher feels that understanding their opinions is crucial. They are also seen

as a crucial component of the process of growth and transformation, particularly in the agricultural sector. [11] Appropriate extension programs that seek to maximize the use of existing agricultural resources and increase unit area production may be created by comprehending their attitudes toward and acceptance of contemporary agricultural technology [12] the following research questions represents the research problem:

- 1- What is the level of wheat farmers' attitudes towards using modern technologies in the villages of Tal al-Sibat and al-Rabi'da, affiliated with Al-Alam District/Salah al-Din Governorate, in general?
- 2- What is the descending order of study fields according to percentage weight?
- 3- What is the correlation between the trends of wheat farmers towards using modern technologies in the villages of Tal al-Sibat and al-Rabi'da, affiliated with Al-Alam District, and a set of independent variables?
- 4- What is the extent of the problems facing wheat farmers in the two villages?

Research Aims

The first objective: Identifying the Wheat Farmers' Attitudes Towards Using Modern Technologies in Al-Alam District/Salah Al-Din Governorate in general.

The second objective: Identify the descending order of study fields according to percentage weight.

Third objective: Determining the correlation between the trends of wheat farmers towards the use of modern

technologies in the villages of Tal al-Sibat and al-Rabi'da, affiliated with Al-Alam District, and a collection of the independent factors listed: (Age, main household income, number of years of wheat cultivation, Type of holding, Area planted with wheat crop, sources of information, participation in extension activities on wheat cultivation).

The fourth objective: Identifying the extent of the problems facing wheat farmers in the villages of Tal al-Sibat and al-Rabi'da

Research Assumes:

There is no significant correlation between the The level of wheat farmers' attitudes towards using modern technologies in the villages of Tal al-Sibat and al-Rabi'da, affiliated to Al-Alam District/Salah al-Din

Table 1. Distribution of sample individuals and research community.

Sample size	Number of farmers	Village name
50	70	Tal al-Sibat
59	82	al-Rabi'da
109	152	Total

*Salah Al-Din Agriculture Directorate / Agricultural Statistics Division, 2025

Prepare Questionnaire Form:

The questionnaire, which is the primary instrument for this study, is among the most effective ways to collect data. The questionnaire was created in three sections following a review of the literature, sources, and prior research, as well as the opinions of experts and specialists in the fields of agricultural extension, education, and psychology, and wheat cultivation specialists. Field crops department experts

Part One: Information on the individual characteristics of wheat growers is included in this part, which are: (Age, main household income, number of years of wheat

Governorate, and its relationship to some variables and each of the following independent factors (Age, main household income, number of years of wheat cultivation, Type of holding , Area planted with wheat crop , sources of information, participation in extension activities on wheat cultivation).

Research Community:

All (152)* farmers from the villages of Tal Al-Sibat and Al-Rabi'da/Al-Alam District were part of the research community. After removing the 30 farmers from the first test sample, a random sample of 72 % of farmers was selected. As a result, the research sample included (109) farmers. As seen in the table below:

cultivation, type of holding, area cultivated with wheat, sources of information, participation in extension activities on wheat cultivation)

Part Two :Attitude level test: This section includes a scale consisting of (41) items to determine the level of wheat farmers' attitudes towards using modern technologies in the villages of Tal al-Sibat and al-Rabi'da, affiliated to Al-Alam District/Salah al-Din Governorate, in order to obtain the paragraphs, the researcher used the following sources:

- A. Examining the literature and earlier research projects that measured

attitudes in related fields, then taking few paragraphs from them and rewording them to fit the current study's needs.

- B. In-person interviews with many farmers in the study region.
- C. The researcher had discussions with professors from the departments of agricultural extension and field crops at the College of Agriculture, as well as academics from Tikrit University's Department of Psychology.

five key areas were highlighted. In its original version, a scale with 55 paragraphs was created by evaluating other studies on the topic of wheat farmers' trends toward the use of contemporary technology. The researcher added more paragraphs and changed and reconstructed others to fit the research, making the total number of paragraphs 40. And formulating it into a concept such that has half positive and half negative aspects. These paragraphs are divided into 5 sections, which are as follows:

- 1- Field of selecting the appropriate variety for cultivation. (7) paragraphs.
- 2- Field of preparing the land for cultivation (6) paragraphs.
- 3- Field of irrigation (7) paragraphs.
- 4- Field of pest control (15) paragraphs.
- 5- Field of fertilization (6) paragraphs.

Part Three: It involved identifying eleven (11) problems that are among the most pressing problems for wheat growers in the villages of Tal al-Sibat and al-Rabi'da / al-Alam District. Each of them was shown with a four-point scale including the choices (High, Medium Low, Nothing). They are given numerical values (1, 2, 3, 4), respectively, and the problems are arranged in descending order according to the average degree of importance for each problem.

A group of expert academics from the Departments of Agricultural Extension, Agricultural Machinery and Equipment, and Field Crops were shown the questionnaire in order to confirm its seeming correctness and content validity. Paragraphs were added or removed from the questionnaire in consideration of their advice.

On December 16, 2024, a pre-test of the questionnaire was administered to 30 farmers who were not included in the final research sample in order to verify its validity. The Cronbach's alpha coefficient was used to calculate stability, and the outcome was (0.85). As a result, the questionnaire demonstrated excellent stability, which is deemed appropriate and when its value is 0.70 or above.

Measurement Of Independent Factors

2-1. The measurement includes the following independent factors:

- 1- Age: The number of years the farmer was when the data was gathered was used to calculate their age.
- 2- Main family income: Both (agricultural, and non-agricultural) alternatives were used to quantify it, and the alternatives (2, 1) were given respectively.
- 3- Number of years of wheat cultivation: The length of time the farmer spent growing wheat was used to calculate this.
- 4- Type of holding: Ownership, contract, rent, and participation were the options used to quantify it, and the corresponding values were 4, 3, 2, 1.
- 5- Area planted with wheat crop: It is determined by calculating the area of dunams that are under cultivation.

- 6- Sources for obtaining information: It was measured through 9 sources, and alternatives were placed in front of them (always, sometimes, rarely, and I do not call), and the alternatives were given (4, 3, 2, and 1) respectively, and thus the values expressing this variable are limited to (9 - 36) degree
- 7- participation in extension activities on wheat cultivation: To measure this variable, the researcher used (5) activities and placed three alternatives in front of each activity (always, sometimes, rarely) and gave numerical values from (3, 2, 1) respectively, and thus the values expressing the variable are limited to (5-15) degrees.

2-2. Measurement Of the Dependent Variable (Attitude):

Each of the 40 paragraphs that were used to measure the trends conveyed the attitudes of wheat farmers in the villages of Tal al-Sibat and al-Rabi'da concerning the use of contemporary technology in wheat production. Each of them was presented with the options (agree, neutral, disagree). The positive paragraphs received the values (3, 2, 1), whereas the negative paragraphs received the values (1, 2, 3). As a result, only numbers between 41 and 123 may represent the trend.

Data Gathering Process:

The questionnaire form was used to collect study data once the researcher had finished building the attitude scale. The period of data collection was from February 1, 2025, to February 27, 2025.

Statistical Methods:

The following statistical techniques were applied after the data collection, unpacking, and tabulation were finished: range, frequency distribution and percentages, standard deviation (Sc.D.), simple correlation equation (Pearson), and Spearman's rank correlation coefficient. The analysis was conducted using the statistical analysis programs (SPSS) (Statistical Package Social Science) for social sciences.

Results And Discussion:

The first objective: Identifying the Wheat Farmers' Attitudes Towards Using Modern Technologies in Al-Alam District/Salah Al-Din Governorate in general.in general.

According to the research findings, the wheat crop farmers' trends have the lowest numerical value (86) and the greatest numerical value (112), with an average of 98.76 degrees and a standard deviation of 6.46 degrees. Based on the range law and category length, the responses were split up into three groups. according to Table No. (2).

Table 2. demonstrates how respondents were distributed based on broad tendencies

Average Scores	AttitudesPercentage	Number	Categories of Attitudes
90.125	22 %	24	Negative (86 -94)
99.48	58.7 %	64	Neutral (95 -103)
107.42	19.3 %	21	Positive (104 – 112)
	100 %	109	total

Table (2) makes it evident that the largest majority of respondents (58.7%) fall into the neutral attitude group, with the negative category coming in second at (22%). According to this (80.7%) of the respondents fall into the categories of negative and neutral attitudes, indicating a

lack of interest in agricultural techniques and demonstrating the extent of their need for extension activities and events to give them the knowledge and experience they need to change their behavior when using agricultural techniques related to wheat crop service operations.

The second objective: Identify the descending order of study fields according to percentage weight.

According to the percentage weight, the research fields were organized in descending

order, and Table No. (3) displays the findings.

Table 3. Arrangement of research fields in descending order

Sequence	Weight Percentage	Maximum value	Number paragraphs	ofAverage Scores	Attitudes	The field
1	89.7	18	6	16.16		Preparing the land for planting
2	88.66	18	6	15.96		Fertilization
3	78.71	21	7	16.53		selecting the appropriate variety for cultivation
4	78.35	45	15	35.26		Pest control
5	71.66	12	7	15.05		Irrigation

According to Table No. (3), the field of agricultural land preparation came in first place with a weight percentage of 89.7. due to expertise and understanding in this area.

With a weight of 71.66, The situation
Third objective: Determining the correlation between the attitudes of wheat farmers towards the use of modern technologies in the villages of Tal al-Sibat and al-Rabi'da, affiliated with Al-Alam District, and a set of the following independent variables:

1- **Age:** With the highest age being 62 and the lowest being 20, that the respondents' average age was 40.20 years. As shown in Table (4), the respondents were split up into three groups

reflects either a lack of awareness or a lack of investment in modern irrigation techniques, or perhaps a reliance on traditional irrigation methods.

Table 4. shows the distribution of respondents according to age groups.

Correlation Coefficients(r)	Average Attitudes Scores	Percentage	Number	Age Categories (year)
- 0.22*	103.4	21.1 %	23	Low (20 – 33) years
	97.69	56.9 %	62	Medium (34 – 47) years
	96.87	22 %	24	High (48 And more) years
		100 %	109	total

Significance level = 0.05

S.D = 10.21

\bar{X} = 40.20

According to table (4), 21.2% of the respondents are in the first age range (20–33 years old). 22 percent of the respondents are in the third age group (48 and beyond), and 56.8% of the respondents are in the second age group (34–47). To find a correlation between the attitudes of wheat farmers towards the use of modern agricultural technologies and age, I used the simple correlation coefficient (Pearson). and its value was (-0.22*). This suggests that there

is a substantial inverse relationship between the two variables. at the (0.05) level. This could be because older farmers are resistant to change because they lack training and education on modern technologies and instead rely on their own knowledge and experience gained over the years. As a result, they have a negative attitude toward using modern technologies in the wheat cultivation process

2- Main Family Income: The respondents were divided into two groups (agricultural and non-agricultural) based

on the primary source of household income, as indicated in Table No. (5).

Table 5. demonstrates how respondents were distributed based on the primary family income categories.

Correlation Coefficients (Rs)	Average Attitudes Scores	Percentage	Number	Categories
0.40**	96.08	41.3 %	45	non-agricultural
	100.9	58.7 %	64	agricultural
		100 %	109	total

Significance level = 0.01

With a percentage of 58.7% and an average trend of 100.9, the agricultural category had the largest proportion of respondents, according to Table No. (5). In contrast, the non-agricultural category had a smaller percentage (41.3%) and an average trend of 96.8. To find a correlation between the attitudes of wheat farmers towards the use of modern agricultural technologies and Main Family Income, I used the simple

correlation coefficient (spearman correlation). and its value was (0.40**). This indicates the presence of a significant correlation between the two variables. At the level of (0.01).. One possible explanation for this might be because farmers who rely on agriculture for their income have a favorable attitude toward utilizing contemporary technologies in the field to boost their earnings and reduce their reliance on non-agricultural sources.

3- Number of years of wheat cultivation: Wheat producers' cultivation varied from (10 - 36) years. The respondents were

divided into three categories based on the range and length of each category, as indicated in Table No. (6).

Table 6. shows the distribution of respondents according to the categories of the number of years of wheat cultivation.

Correlation Coefficients(r)	Average Attitudes Scores	Percentage	Number	Categories
0.24*	98.33	73.4 %	80	Low (2 – 14) years
	99.85	18.3 %	20	Medium (15 – 27) years
	102.44	8.3 %	9	High (28 - 40) years
		100 %	109	total

Significance level =0.05

S.D = 9.33

\bar{X} = 12. 53

Table No. (6) indicates that the largest proportion of respondents (73.4%) fall into the small category, with an average trend of 98.33 numeric values, while the smallest proportion of respondents (8.3%) fall into the large category (average trend of 102.44 numeric values). To find a correlation between the attitudes of wheat farmers towards the use of modern agricultural

technologies and Number of years of wheat cultivation, I used the simple correlation coefficient (Pearson). and its value was (0.24*). This suggests that there is a link between the two variables. The reason may be that the more experience the farmer has in growing wheat, the more likely he is to adopt modern agricultural techniques.

4- **Type of holding:** As indicated in Table No. (7), the respondents were divided into four groups based on their Type of holding: ownership, contract, rent, and participation.

Table 7. shows the distribution of respondents according to Type of holding.

Correlation Coefficients(r)	Average Attitudes Scores	Percentage	Number	Categories
0.55 **	96	5.5 %	6	Participation
	94.7	27.5 %	30	Rent
	99.76	55 %	60	Contract
	106.38	12 %	13	Ownership
		100 %	109	Total

Significance level = 0.01

According to Table No. (7), the contract category has the largest percentage of respondents (55%), with an average attitudes of (99.76) numeric values, while the participant category has the lowest percentage of respondents (5.5%), with an average trend of (96) numeric values. To find a correlation between the attitudes of wheat farmers towards the use of modern agricultural technologies and Type of holding, I used the simple

correlation coefficient (spearman correlation). and its value was (0.55*). This suggests that there is a Medium link between the two variables. This means that the more a farmer owns his land or works under a long-term contract system, the more likely he is to adopt modern technology, while tenant or sharecropper farmers are less likely to adopt technology due to the instability of tenure.

5- **Area planted with wheat crop:** In the villages of Tal al-Sibat and al-Rabi'da, the values representing the cultivated area for wheat cultivation were restricted to 6–500

dunums. As indicated in Table No. (8), the respondents were divided into three groups based the range and length of the category.

According to Table No. (9), the largest proportion of respondents (51.3%) fell into the medium group, with an average trend of 99.10, while the smallest proportion (22%), with an average trend of 95.16, falls into the low category. To find a correlation between the attitudes of wheat farmers towards the use of modern agricultural technologies and Sources for Obtaining Information, I used the simple correlation coefficient (spearman correlation). and its value was

(0.35**). This suggests that there is a relationship between the two variables. Consequently, we accept the . This means that farmers will have a more positive attitude toward using modern technologies if they have enough knowledge about them. This is because technologies are always changing, and farmers who have enough knowledge about them will be better able to understand and utilize them, which will increase production while lowering costs and effort.

7- Participation In Extension Activities on Wheat Cultivation: The research results showed that the lowest value for participation in activities was 5 and the highest value was 14. The respondents were distributed into three categories using the range law. The values of the first category were between (5-7) and were called (rarely), while the values of the

second category (sometimes) ranged between (8-10), while the values of the third category (always) ranged between (11-more). As shown in Table (10):

Table 10. shows the distribution of respondents according to participation in extension activities on wheat cultivation.

Correlation Coefficients (Rs)	Average Attitudes Scores	Percentage	Number	Categories
0.37 **	96.10	35.8 %	39	rarely (5 – 7)
	99.65	44.9 %	49	sometimes (8 – 10)
	102.61	19.3 %	21	always (11 And more)
		100 %	109	Total

Significance level = 0.01

Table No. (10) indicates that the majority of respondents (44.9%) fell into the sometimes group, with an average of 99.65; the smallest number of respondents (19.3%) fall into the

always category, with an average trend of 102. 61.. To find a correlation between the attitudes of wheat farmers towards the use of modern agricultural technologies and Participation in Extension Activities on

Wheat Cultivation, I used the simple correlation coefficient (spearman correlation). and its value was (0.37**). According to this, there is a association between the two variables. This could be as

a result of the fact that respondents who take part in extension activities improve their attitudes and views about the usage of crop service-related agricultural technology and acquire more knowledge and expertise.

The fourth objective: Identifying the extent of the problems facing wheat farmers in the villages of Tal al-Sibat and al-Rabi'da

Table No. (11) displays the magnitude of the issues wheat farmers face while utilizing

contemporary technology, which were ranked in decreasing order based on the arithmetic mean for each issue.

Table 11. shows the order of problems facing farmers when using modern technologies in the process of growing wheat crops in the villages of Tal al-Sibat and al-Rabi'da, affiliated with Al-Alam District/Salah al-Din Governorate, in descending order.

rank	Average Attitudes Scores	Problem Effect				Farmers problems	The sequence in the form
		Nothing	Low	Medium	High		
1	3.96	0	0	4	105	High prices of chemical fertilizers	4
2	3.95	0	0	6	103	Complex procedures at seed receiving centers	1
3	3.94	0	0	7	102	Complex procedures for the annual plan by the Ministry of Agriculture	11
4	3.91	0	0	10	99	Delay in receiving farmers' financial dues after marketing.	10
5	3.84	0	4	9	96	Lack of groundwater (well water)	8
6	3.80	0	0	22	87	High cost of purchasing a sprinkler irrigation system	2
7	3.78	0	4	16	89	High prices of high-yield seeds.	9
8	3.67	0	0	39	70	Fertilizers not arriving on time	5
9	3.60	0	4	36	69	High prices of pesticides	6
10	3.39	0	5	57	47	High cost of drilling groundwater wells	7
11	3.32	0	19	36	54	High fuel prices	3

Table No. (11) shows that the High prices of chemical fertilizers prices ranked first in the problems, Farmers' heavy reliance on chemical fertilizers to boost agricultural yields might be the cause. The increase in the cost of these fertilizers makes it harder for farmers to get the amounts needed to boost crop yields, which has a detrimental impact on agricultural profits. We also find that the paragraph on High fuel prices ranked last in terms of the problems suffered

by farmers in the villages of Tal al-Sibat and al-Rabi'da. This could be because farmers have more effective alternative solutions to dealing with fuel, such as using renewable energy or more fuel-efficient technologies, which reduces the impact of the problem on agricultural production, or because other issues, such as high fertilizer prices and a lack of support, are more pressing for farmers than the fuel problem, which ranks last.

Conclusions:

-1

The results indicated that the general level of the respondents' attitude was neutral and tended towards a negative attitude towards the use of modern technologies in crop cultivation. This leads us to the conclusion that guiding efforts are necessary, together with financial assistance, fertilizers, insecticides, seeds, and technology that shift farmers' perspectives toward the use of contemporary technologies for crop growth and harvest.

wheat cultivation. This leads us to the conclusion that training programs for cultivating and servicing the wheat crop in the study region should take these considerations into account

-2 The results showed a significant positive correlation between farmers attitudes and most of the studied factors, which are: (Main Family Income, Type of holding, Area planted with wheat crop, Sources for Obtaining Information, Participation in Extension Activities on Wheat Cultivation. Number of years of

-3 The results showed a significant inverse correlation between age and farmers' attitude to use modern agricultural techniques in wheat, this leads us to the conclusion that senior farmers require specialized training programs.

Recommendations:

-1

Create training programs to help wheat farmers become more knowledgeable about current crop production technology so that

-4 The findings indicated that for the majority of the problems examined, the average problem size was substantial. This leads us to the conclusion that wheat farmers in the study region have significant issues that impact the planting and harvesting processes.

their attitudes about utilizing them are more firmly established.

-2 To persuade senior farmers of the value of utilizing contemporary technology in crop production and service, implement demonstration fields and field days in wheat cultivation.

-3 Demonstration: Creating model fields in the region to practically demonstrate the positive results to farmers

-4 Cooperation between the Ministry of Trade and the Ministry of Agriculture to obtain enough funds to reimburse wheat farmers for their debts in accordance with the agricultural plan.

-5 Offering farmers subsidized pricing and meeting production needs at the designated times to support the crop.

-6 Making it easier for the appropriate departments to register wheat growers in the agricultural plan.

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