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Obstacles of Sustainable Agricultural Development from the Point of View of Agricultural Extension Workers in Sulaimani Governorate

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Abstract

The study aimed to identify the obstacles facing sustainable agricultural development from the Point of View of agricultural extension workers in Sulaymaniyah Governorate in general, as well as to identify these obstacles in each of the development dimensions (social, economic, and environmental), in addition to arranging the dimensions in descending order of importance. It also aimed to find the variance between the obstacles to sustainable development and a group of independent variables. The research population comprised all agricultural extension personnel employed at the extension centres within Sulaymaniyah Governorate, totalling 93 workers in agricultural extension. Theseworkers were distributed throughout the various districts and sub-districts of the governorate;The research results revealed that the obstacles facing the achievement of sustainable development are average and tend to rise in general in all its fields as well as in each field of the three dimensions of sustainable agricultural development. The results showed that the field of the economic dimension came in first rank when arranging these fields according to their importance. These results also showed that the respondents did not show a difference in their opinions towards achieving sustainable agricultural development with the variables of age, academic achievement and participation in training courses, while they showed a varaince with the variables of information sources and the attitude towards sustainable agricultural development. The research concluded that there are serious and major obstacles hindering the achievement of sustainable agricultural development in Sulaymaniyah Governorate. The research recommended making efforts and activating the role of agricultural extension and other development organizations to address these obstacles.

Keywords: Obstacles, Sustainable Agricultural Development, Agricultural Extension Workers.

*The research is extracted from the master's thesis of the Firsit researcher.

I. Introduction

An important pillar of the economies of many countries worldwide, both developed and developing, is the agricultural industry. [16] The interconnectedness of agricultural resources, poverty, and conflict in border regions significantly impacts development processes, affecting food security, peace, and social safety for communities.[1] Development is the aim that every human society aspires to in order to meet the fundamental requirements of its members and raise their standard of living. [4] The development in rural areas appears to embody a model of agricultural development [30] Rural development, including agricultural development, plays a significant function in both social and economic life. In industrialized nations, developed countries, governments provide significant financial, technical, scientific, and technology assistance while developing countries face challenges due to limited resources and increasing interest in agricultural development [15]. It needs a basic strategy for agricultural/rural

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development in the globalizing era. [1]. the issues of agriculture development are multidimensional and multi-sectoral, i.e., they are not confined to one sector of production [5]. Therefore, achieving the Sustainable Development Goals on hunger and poverty requires success in leveraging agriculture for development. In the world economy right now [7]. The majority of farmers in developing countries practising intensive farming have caused environmental damage. Largely, the solution to this issue lies in sustainable agriculture. [18].The countries of the world seek to achieve integrated agricultural development and for this they have adopted many methods and means to develop their agriculture, including the use of modern agricultural technologies. [8] Therefore, achieving the Sustainable Development Goals on hunger and poverty requires success in leveraging agriculture for development. Given the state of the world economy today [7], any nation's ability to expand its agriculture sustainably depends on how wisely it uses its natural resources. Therefore, if agriculture fails, it will have a severe negative impact on the economy because declining agricultural growth affects GDP as well as employment, which leads to a rise in poverty and hunger. Sustaining economic viability, improving environmental quality, and meeting human needs for food, feed, and fiber are only a few of the objectives of sustainable agriculture [26]. Sustainable agriculture aims to meet food demand while minimizing environmental impact and considering social and economic aspects, despite high costs associated with transitioning from conventional farming. [13] "The management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations" is how the Food Agriculture Organization (FAO) defines sustainable agriculture [6]. .The literature indicates that sustainable development includes three main dimensions [19] Sustainable development is socially acceptable, commercially viable, and environmentally safe when it protects soil, water, and plant and animal genetic resources [27]. Led by the social aspect, which includes adopting the justice principle, which seeks to fulfill human needs and accomplish social fairness , adequate income, and improve the standard of living of individuals. This dimension also relates to health, education, housing, and work, and ensuring the safety of its traditional production systems and social environment. It mainly aims to improve the relationship between nature and humans [12]. Increasing societal well-being and eradicating poverty via the most effective and efficient use of natural Resources that is, attaining economic development and the just distribution of resources and wealth is what is meant by economic sustainability. as well as improved use of natural resources [20]. The third main dimension of sustainable The environmental dimension of sustainable development focuses on protecting natural resources like water, air, land, and biodiversity from pollution, carbon dioxide accumulation, and habitat loss to ensure human protection.[17] effectiveness The caliber and of services for agricultural extension significantly impact the sustainability global and output of the agricultural industry, requiring concerted efforts to develop human and material resources [21]. Agricultural extension services are crucial for sustainable development, with over 90% of public agents working in developing countries[2].Although the Kurdistan Region of Iraq is not better than Iraq in terms of development, despite the region's administrative and natural specificity, as it is characterized by its picturesque nature and the abundance of its natural resources, including rivers, forests and mountains, many obstacles face sustainable development in Sulaymaniyah Governorate, the second largest governorate in the region. A study by [22]. found that the level of knowledge of the idea of sustainable development among agricultural workers is generally average [16] This situation is quite similar to that of extension organizations working in the Kurdistan Region, especially in the Sulaymani Governorate, which is a crucial portion of the region and faces the same difficulties as other extension organizations across the region. Irain Sulaimani Governorate by posing the following research inquiries

1- What are the challenges to agricultural development from the point of view of agricultural extension workers in Sulaimani Governorate?

2- What is the variance between the differences between the obstacles to agricultural development from the point of view of agricultural extension workers in Sulaimani Governorate and set of independent variables specific to the respondent?

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II. RESEARCH OBJECTIVES:

A. Identify the obstacles to agricultural sustainable development from the point of view of agricultural extension workers in Sulaimani Governorate in general.

B. Identifying the obstacles of sustainable development in each of the following dimensions of sustainable development (social dimension, economic dimension, environmental dimension)

C. Arranging the fields of obstacles to development according to their importance

D. Finding the variance between the degree of obstacles to sustainable development and the following variables of the respondents; age, academic attainment, Sources of information about sustainable agricultural development, Attitude towards sustainable agricultural development, and Participation in training courses on sustainable agricultural development.

HYPOTHESES FOR RESEARCH:

There is significant variance between obstacle agricultural sustainability development and each of the variable (age, academic attainment, Sources of information about sustainable agricultural development, Attitude towards sustainable agricultural development, and Participation in training courses on sustainable agricultural development)

4. RESEARCH OF MATERIALS AND METHODS:

Research Methodology: Research methodology: The descriptive approach was used in the current research as it is the appropriate method for providing detailed data and facts about the needs of the targets at a specific time [11] this approach is suitable for obtaining detailed data and facts about Obstacles of sustainable agricultural development from the point of view of agricultural extension workers in Sulaimani Governorate.

Research area: Sulaymani Governorate was chosen from the Kurdistan Region as a region to conduct the research, because it is one of the important agricultural governorates,which is characterized by the diversity of agricultural activity, especially in the field of livestock, and achieving food security, Sulaymani Governorate, which is part of the Kurdistan Region, was chosen as the study's focus because it is an important agricultural region that provides a significant amount of the local population with food and a means of subsistence.

Research population: The target population of the research included all agricultural agricultural employees in the department of agricultural Extension in the Capitalize each word

governorate are distributed over its affiliated districts and their number were 114agricultural employees. Replies were obtained from 93 respondents from the total. Table (1) shows the distribution of respondents in the research population.

Table 1: Distribution of members of the research population

Governorate	Agricultural Extension center in the governorate	Number of respondents in agricultural extension center	Number of respondents in the pre-test sample	Population

University of Thi-Qar Journal of agricultural research

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Sulaimani	Center	54	20	36
	Chwarqurna	4	-	4
	Dukan	4	-	4
	Chamchamal	8	-	8
	Karahanjir	12	-	10
	Sharazur	4	-	4
	Tanjaro	5	-	5
	Darbandixan	4	-	4
	Kufri	5	-	4
	Kalar	4	-	4
	Bazian	5	-	5
	Chwarta	5	-	5
	Total	114	20	93

Data Collection tool:

The questionnaire is an appropriate tool for obtaining objective information, data and facts through which the objectives of the research can be achieved [9] to achieve the study's goals, a specially designed questionnaire was painstakingly created. The researcher thoroughly reviewed relevant academic and literary sources in the field of agricultural extension before developing the two-part questionnaire. Furthermore, as explained below, expert consultation in this field was sought: Independent variables are included in the first section. Age, Academic attainment,, Sources of agricultural information, attitude towards sustainable agricultural development and Participation in training courses),agricultural information, Participation in training courses and Attitude towards sustainable agricultural development), Regarding the questionnaire's second section, it had three fields: Respondents were given a choice between strongly agree, agree, disagree, neutral, and strongly disagree on each issue. Numerical values of 5, 4, 3, 2, and 1 were assigned to these options, accordingly.The first field, social obstacles, had 39 items; the second, economic obstacles, had 31 items; and the third, environmental obstacles, had 35 items. Thus, theoretically, these strategies' efficacy was restricted to a score range of 105 to 525. A group of experts from the University of Sulaimani's Colleges of Agriculture and Administration were given the questionnaire in order to assess its perceived validity and content. Their suggestions resulted in changes to the questionnaire, such as the addition or deletion of particular items. A pre-test was carried out on a sample of 20 agricultural employees assigned to extension work in the Directorate of Agriculture in Sulaymaniyah Governorate from December 1, 2024, to January 13, 2025, to ensure the validity of the questionnaire items. This sample was not part of the research sample because they were not located within the 12 agricultural extension centers, but instead in the governorate's General Directorate of Agriculture. The reliability of the scale employed in this study was evaluated using Cronbach's alpha coefficient, a well-accepted standard for evaluating the dependability of measurement instruments. The barrier agricultural sustainability development scale was found to have a reliability coefficient of 0.92, indicating consistency across its items. Information from the respondents was collected from January 20, 2025, to April 5, 2025.

University of Thi-Qar Journal of agricultural research

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III. RESULTS AND DISCUSSION

.1 Identify the obstacles to agricultural development from the point of view of agricultural extension workers in Sulaimani Governorate.

The research findings revealed that the greatest numerical value acquired by the agricultural employees for the obstacles to agricultural development was 515 numeric values as well as the lowest number was 293 numeric values, with an average of 413.96 points, on a scale with a theoretical range between 105-525, and a standard deviation of 43.962. The respondents were distributed according to their degrees of obstacles to agricultural development as indicated in table 2, into three groups (Low, Medium, and High).

Table 2 Distribution of the obstacles to agricultural development from the point of view of agricultural extension workers in Sulaimani Governorate

Categories	Frequency	%	Average	Standard score	$\bar{X}$	Std. deviation
(293-367) Iow	14	15.05	345.93	133		
(368-442) Middle	57	61.29	408.23	162	423.96	43.962
(443And more) High	22	23.66	472.09	191		
Total	93	100	413.96	191		

According to Table 2, the largest proportion of responders is 61.29% in the medium category 368-442, with an average of obstacles sustanaiblity agricultural development (408.23) point. While the lowest percentage of the respondents was 15.05%, in the Low category 293-367 with an average of 345.93 point. The findings make it evident that most of the responders who have Medium obstacles to agricultural development tend to High, and that the Medium and High categories constituted 84.95% of the total number of respondents.This reflects their awareness of the existence of a number of Social, economic and environmental challenges that hinder the improvement of the agricultural sector. These obstacles may be related to weak agricultural infrastructure, limited government support for production inputs, limited adoption of modern technologies, as well as problems related to agricultural marketing and financing, in addition to environmental and climatic factors this outcome aligns with the research findings of [16]. But not consistent with the findings of the study of [28]

2 Identifying the obstacles of sustainable development in each of the following dimensions of sustainable development (Social Dimension, Economic Dimension, and Environmental Dimension)

2.1 Distribution of the obstacles of agricultural development from the point of view of agricultural extension workers in the field of (Social Dimension)

According to the research findings, the agricultural workers' average numerical value for the barriers to agricultural development was 150.68, with the greatest value being 191 and the lowest being 105. The respondents were distributed according to their degrees of obstacles to agricultural development separated into three groups Table (3) displays the three levels: low, medium, and high.

Table (3) Distribution of the obstacles of agricultural development from the point of view of agricultural extension workers in the field of (Social Dimension)

Categories	Frequency	%	Average	$\bar{X}$	Std. deviation
(105-133) low	14	14.9	123.93		
(134-162) Middle	54	58.5	147.69	150.68	17.609
(163-191) High	25	26.6	172.80		
Total	93	100	150.86		

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According to Table (3), the largest proportion of participants is (58.5%) in the Medium category of in the medium category 134-162, with an average obstacles to agricultural development 147.69 points ,while the lowest percentage of the respondents was 14.9%, in the Low category 105-133. with an average of 123.93 point, The findings make it evident that most of the responders who have medium obstacles to agricultural development tend to High, and that the Medium and High categories constituted 85.1%of the total number of respondents, , indicating that the social challenges identified in your research are still relevant and that requires social reform in educational aspects, especially adult education, health, and rural women's development, as well as developing agricultural extension campaigns to increase understanding of sustainable agriculture development's significance and its vital role in developing societies and preserving the rights of future generations. This result is consistent with the findings of the study of [14] [23].

.2.2 Identifying the obstacles to agricultural development from the point of view of agricultural extension workers in the field of (Economic Dimension).

According to the research findings, the agricultural employees' average score for the barriers to agricultural development was 123.62 points, with the greatest score being 155 points and the lowest being 85 points. The respondents were distributed according to their degrees of obstacles to agricultural Table (4) divides development into three groups: Low, Medium, and High.

Table (4) Distribution of the obstacles to agricultural development from the point of view of agricultural extension workers in the field of (Economic Dimension)

Categories	Frequency	%	Average	$\bar{X}$	Std. deviation
(85-108) low	13	13.98	99	123.62	14.886
(109-132) The middle	54	58.06	120.70		
(133-156) high	26	27.96	142		
Total	93	100	123.62		

According to Table (4), the largest proportion of participants is 58.06%, in the medium category 109-132, with an average of obstacles to agricultural development 120.70 points, while the lowest percentage of the respondents was 13.98%, in the Low category 85-108 with an average of 99 points. The findings make it evident that most of the responders who have Medium obstacles to agricultural sustainable development tend to High, and that the Medium and High categories constituted (86.1 %) of the total number of respondents, indicating that the economic challenges identified in the research The findings suggest that economic challenges are a major concern for agricultural sustainable development, extension workers identifying either moderate or high levels of economic barriers. Addressing these issues especially access to the need to support the costs of agricultural inputs and address unemployment by encouraging the establishment of agricultural projects and developing agricultural extension activities to address economic obstacles.[29][24]

2.3 Identifying the obstacles to agricultural development from the point of view of agricultural extension workers in the field of (Environment Dimension).

According to the research findings, the agricultural employees' average score for the barriers to agricultural development was 139.47 points, with the greatest score being 173 points and the lowest score being 97 points. Table 5 shows the distribution of respondents into three categories (Low, Medium, and High) based on their levels of barriers to agricultural development

University of Thi-Qar Journal of agricultural research

Thi-Qar Journal of agricultural research

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Table (5) Distribution of the obstacles to agricultural development from the point of view of agricultural extension workers in the field of (Environment Dimension)

Categories	Frequency	%	Average	$\bar{X}$	Std. deviation
(97-122) low	11	11.83	108.55	139.47	16.972
(123-148) The middle	55	59.14	136.16		
(149-174) High	27	29.03	158.81		
Total	93	100	139.47		

Table (5) shows that the largest proportion of responders is 59.1%, in the Medium category 123-148, with an average of obstacles to agricultural development (136.16) points
while the lowest percentage of the respondents was 11.8%, in the Low category 97-122 with an average of 108.55 points. The findings make it evident that most of the responders who have medium obstacles to agricultural development tend to High, and that the Medium and High categories constituted 88.1% of the total number of respondents. indicating that the environmental challenges identified in the research environmental pressures ranging from climate stress and polluted water to degraded landscapes pose serious to agricultural productivity. These factors challenge the efforts of extension workers in supporting resilient farming practices and sustaining rural livelihoods. This result is consistent with the vision presented by (28) regarding the importance of the role of agricultural extension in reforming and developing the environmental dimension to ensure the achievement of sustainable agricultural development.

3- Arranging the fields of obstacles to development according to their importance.

The main fields Obstacles of Sustainable Agricultural Development from The Point Of View of Agricultural Extension Workers is consist (3) fields and it is (Social, Economic and ,Environment). These fields showed weighted averages between 3.51 and 4.49 points, and corresponding percentage weights between 70.2% and 89.8%. According to their frequency among respondents, these fields are shown in descending order in Table (6).

Table (6) distribution of respondents according to different fields of obstacles to development

Field	Maximum degree of the field	Average obstacle agricultural development	Average of weighted average	Weight %	St. Deviation	Rank
Economic Obstacle	155	123.62	4.49	79.75	14.886	1
Social Obstacle	195	150.86	351	77.36	17.609	3
Environment Obstacle	175	139.47	3.86	79.69	16.972	2

Table (6) shows that the field of Economic Has a weighted average score of 4.49 and a percentage weight of 79.75, placing it first among other fields.this may be due to the importance of the economic dimension as the force that achieves sustainable agricultural development. while the field social ranked in contrast to other domains, based on a weighted average score of 3.51 and a percentage weight of 77.36, this result may be due to the weak effectiveness of agricultural extension in educating people about the significance of social aspects such as education, health, and social justice and their important role in achieving sustainable agricultural development.[31]

4. Finding the variance between the degree of obstacles to sustainable development and the following variables of the respondents: age, academic attainment, Sources of information about sustainable agricultural development,

University of Thi-Qar Journal of agricultural research

Thi-Qar Journal of agricultural research

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Attitude towards sustainable agricultural development, Participation in training courses on sustainable agricultural development.

1- Age: : According to the results, the average age of the respondents was determined to be 47.2 years, with the oldest being 59 and the youngest being 33., the respondents were classified into three age groups, as demonstrated in Table 7. To evaluate the variations in the arithmetic means of the to the degree of obstacles of agricultural sustainability and various age groups1.014, which is less than the critical tabular (F) value, was the computed value after analysis of variance (F) was applied. As a result, the research hypothesis is disproved, indicating that opinions among agricultural extension workers of various ages are the same. This outcome aligns with the research findings of [3][10].

2- Academic attainment: The results indicated the Academic attainment of the respondents ranged from High school to PHD. The respondents were classified into five distinct groups according to their level of education, as shown in Table 7. To test the differences between the arithmetic means obstacle of the sustanaiblity agricultural development according to Academic attainment The study hypothesis was rejected because the computed value of the analysis of variance (F), which was 0.746, was less than the tabular (F) value at the level (0.01, 0.05). As a result, people with different educational backgrounds do not significantly differ in their views on the development of agricultural sustainability, it cannot be said that educational level clearly influences the respondents' assessment of the obstacles to sustainable agricultural development, this result is consistent with the findings of the study of [25].

3-Sources of information about sustainable agricultural development: The findings showed that seven items on a three-point scale were used to test this characteristic. (Always, sometimes, never), and the weights were assigned to it (3, 2, 1) correspondingly, and the overall scale score obtained between 7-21 points. As shown in Table 7 to assess how the arithmetic means differ from one another of the obstacle development agricultural sustanaiblity according Sources of information about sustainable agricultural development, an aspect of the study hypothesis was tested using analysis of variance (F), and the computed value was 249.617, which is greater than the tabular (F) value at the level 0.01. Thus, based on their information sources, it can be concluded that agricultural extension agents indeed have notable differences in their opinions about the organizational factors shown in Table 7.

4- Attitude towards sustainable agricultural development: According to the findings, twelve items were created to gauge the agricultural extension agent's attitude towards agricultural sustanaiblity development prepared to measure the agricultural extension agent's attitude towards obstacle agricultural sustanaiblity development, including six positive and six negative items. according to positive (1,2,3,4,5) and negative (5,4,3,2,1) weights were applied to a five-point scale (strongly agree, agree, neutral, disagree, and strongly disagree), resulting in a total score that ranged from 12 to 60 points. With a mean score of 41.18 degrees, the majority of participants (48.4%) are categorized as Neutral 36-45, per Table 3. In contrast, the smallest proportion of participants 23.7% fall under the positive 26-35category, yielding an average score of 32.27. To evaluate the variations in the arithmetic means of the obstacle development agricultural sustanaiblity according Attitude towards sustainable agricultural development. A component of the study hypothesis was addressed by the use of analysis of variance (F), whose computed value was 234.605, greater than the tabular (F) value at the level 0.01. According to these results, the majority of respondents had neutral sentiments and tend toward a medium viewpoint relating agricultural sustanaiblity development, to assess the variance between the effectiveness obstacle agricultural sustanaiblity development and the attitudes towards these practices, prompting the aspected of the research hypothesis

5-Participation in training courses on sustainable agricultural development: The study's findings revealed that 63.4% of agricultural extension personnel engage in training courses,with an average of challenges of416.39 point, while the remaining 36.6% did not participated in such courses, with an average of 409.96, and a standard deviation of 43.962, as displayed in Table 7 According to Table 7 the data to evaluate the variations in the arithmetic methods of the challenge of sustainable agricultural development according to Training Program Utilizing analysis of

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variance (F), the computed value was.491, which is less than the level's tabular (F) value (0.01, 0.05), thus rejecting the research hypothesis,., The research hypothesis is disproved, indicating that there are notable disparities in the viewpoints of agricultural extension workers about the development of agricultural sustainability based on their involvement in training programs. Table (7) displays the outcomes of dependent variables:

Table (7): The distribution of respondents based on dependent variables

Variable	Frequency	%	Average of obstacle agricultural sustanaiblity development	Std.divation	Variance	Sig
Age						
33-41	18	19.3	413.39	43.962	1.014	0.36
42-50	46	50.2	419.83			
51-59	29	30.5	405.00			
Academic attainment						
High school	11	11.8	408.91	43.962	0.746	.564
Institute	21	22.6	424.71			
Bachelors	47	50.5	414.70			
Higher Education	12	12.9	400.25			
PHD	2	2.2	393.50			
Source of information about sustanaiblity agricultural development						
Low	38	40.9	12.82	• 2.592	249.617	.000
Medium	47	50.5	16.64			
High	8	8.6	20.38			
Attitude toward sustanaiblity agricultural development						
Negative	22	23.7	32.27	*	234.605	.000
Neutral	45	48.4	41.18			
Positive	26	28	49.35			
Participation in training courses on sustainable agricultural development						
Participation	59	63.4	416.39		.491	.485
Non-participation	34	36.6	409.74			

∗Significant at the level of 0.05 ∗∗Significant at the level of 0.01

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IV. CONCLUSIONS:

The outcomes of the study enable the formulation of the following conclusions:

1. The research results showed that the majority of agricultural extension workers in Sulaymaniyah Governorate indicated that there are medium and high obstacles that hinder the achievement of sustainable agricultural development in general and in all its social, economic and environmental dimensions. From this, it can be concluded that there are serious obstacles to achieving sustainable agricultural development..
2. When arranging the dimensions of sustainable development, the economic dimension came in first place. This confirms the importance of the economic dimension and the vital role played by the availability of capital and financing in achieving other felids of sustainable agricultural development.
3. Unplanned urban expansion is ranked first in the social dimension because it reduces farmland, displaces farmers, and threatens long-term food security making it a major social challenge in agricultural development.
4. The conversion of farmland to residential use is ranked highest economically because it cuts agricultural income, reduces food supply, and weakens the farming sector's long-term viability.
5. .it is possible that the environmental obstacle which weakens local, sustainable agriculture, increases pollution from imports, and contributes to land abandonment and environmental degradation
6. a significant variance between the of age,, Educational level, Academic ,, and sources of agricultural information , attitude toward sustainability agricultural development, suggests that these factors are crucial in establishing the obstacle agricultural sustainability development, While the variables of academic achievement and participation in training courses do not play such a role.

RECOMMENDATIONS

1. Strengthen planning by establishing structured frameworks for program design, implementation, and evaluation. Ensure timely funding and resource allocation to support field operations and extension activities, Improve inter-agency coordination across extension services, agricultural research, and educational institutions.
2. Involve extension workers in planning Increase government funding. Encourage partnerships with the private sector. Share data and plans across organizations. Provide regular training for extension workers.
3. Encourage soil conservation, crop rotation, and organic inputs to protect land and water resources Rehabilitate degraded land Launch reforestation and land restoration projects to revive productivity Enforce land-use regulations to prevent misuse of agricultural land.

Train farmers on environmental protection and sustainable land management.

4. Designate and legally protect agricultural zones to prevent construction on farmland, improve rural services (education, healthcare, infrastructure) to reduce migration pressure on cities.
5. Limit the conversion of fertile agricultural land to residential or commercial use. Provide tax breaks or subsidies to landowners who keep land in agricultural production Increase support for modern farming to make agriculture more profitable and attractive.
6. Provide subsidies, training, and market access for local farmers. Launch awareness campaigns highlighting the environmental and economic benefits of buying local, improve storage, transport, and market infrastructure to reduce reliance on imports.
7. Organize workshops and continuous learning programs to update knowledge on sustainable practice, ensure that sustainable agriculture is a core part of extension services and farmer education, Facilitate networks between extension workers, researchers, and farmers to share innovations and local solutions. –

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