The Knowledge Level of Cultivators in Zomar District / Ninevah province in agricultural Process in Tometo Seedling Production

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Abstract

The research aims to identify tomato cultivator knowledge level in Zomar District/Nineveh province in tomato seedling production . To identify the variance in knowledge level depending on variables which are: cultivated area of tomato ; education level; number of the experience years of tomato farming ; land ownership ; sources of information ; previous training and type of farming career . Data was collected using a field questionnaire; the first part include from independent variables scale, while the second part include from measure of knowledge level consists of (34) items distributed on (4) fields are : preparation of seedling ; service the seedling in plastic household ; process of choice and pick up the seedling ,and planting the seedling in the arboretum land. Content validity and extreme comparison have been used to test validity; reliability coefficient has been tested using Kuder Ritchardson (0.88) ; also the items discrimination and difficulty coefficient have been found . The research society consist of all tomato cultivation(92) cultivators; data were analyzed using: Mean; Kruskal Wallis; Mann Whitney test. Results show that (44.565 %) of cultivators have a medium knowledge ; a higher knowledge level in preparation of seedling field .The result shows that there aren't significant variances in knowledge level according to educational level ; Land ownership; sources of information . And there are significant differiences according to cultivated area of tomato ; experience years of tomato farming ; type of farming career . There are several recommendations and suggestions.

Keywords : Knowledge level , tomato cultivators ,Zomar District

المستوى المعرفي لزراع ناحية زمار / محافظة نينوى في العمليات الزراعية لإنتاج شتلات الطماطة

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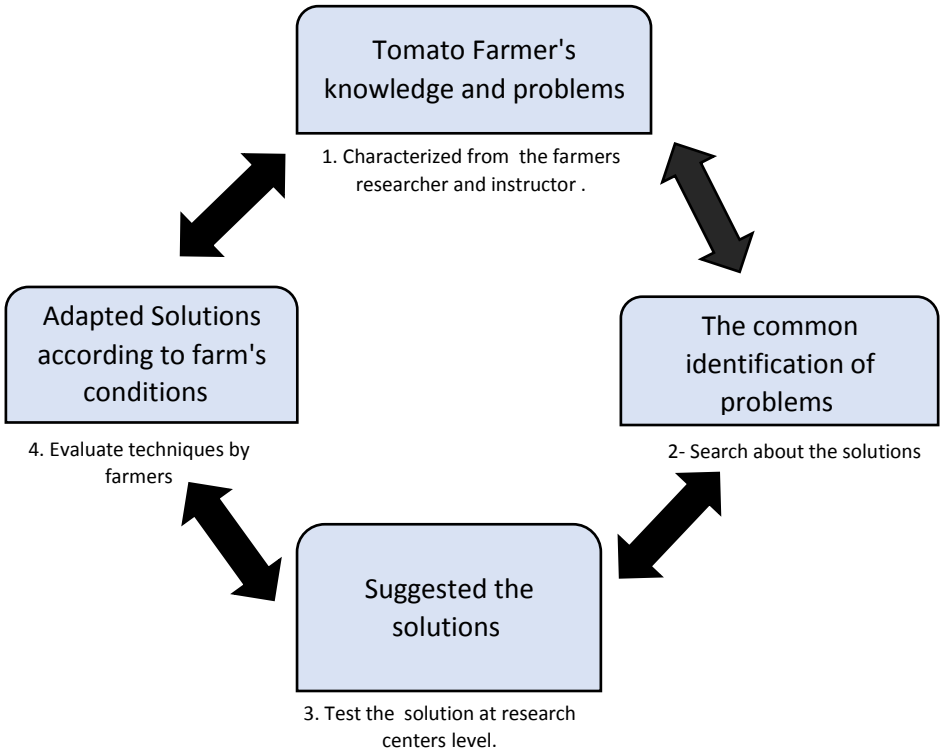
الخلاصة

استهدف البحث تحديد مستوى معارف زراع الطماطة في ناحية زمار/ محافظة نينوى في انتاج شتلات الطماطة؛ ايجاد الاختلاف في المستويات المعرفية وفقا للمتغيرات : المساحة المزروعة بالطماطة , مستوى التعليم , عدد سنوات الخبرة بزراعة الطماطة , ملكية المشتل , مصادر المعلومات المعتمدة في زراعة الطماطة , التدريب السابق ونوع مهنة الزراعة . وقد تم جمع بيانات البحث بواسطة استمارة استبيان الجزء الاول منها متكون من متغيرات مستقلة ؛ بينما تضمن الجزء الثاني منها اختبار لقياس مستوى معارف الزراع تكون من (34) فقرة موزعة على اربعة مجالات هي : تحضير الشتول , خدمة الشتول في المشتل المحمي, اختيار والتقاط الشتلات , زراعة الشتلات في ارض المشتل . تم التأكد من صدق المحتوى وصدق المقارنات الطرفية وتم ايجاد ثباتها فاستخرج معامل الثبات بطريقة كودر – ريتشاردسون والذي بلغ (0,88) كما تم ايجاد قوة تمييز الفقرات ومعامل صعوبتها . تكون مجتمع البحث من جميع زراع الطماطة في ناحية زمار والبالغ عددهم 92 مزارع ؛ بعد جمع البيانات حللت احصائيا باستخدام المتوسط الحسابي واختبار مان وتني واختبار كروسكال والس واظهرت النتائج 44,565 % من الزراع لديهم معارف متوسطة واعلى مستوى معرفي في مجال تحضير الشتول ؛ فضلا عن عدم وجود اختلافات معنوية في المستوى المعرفي وفقا للمستوى التعليمي , ملكية المشتل ومصادر المعلومات المعتمدة في زراعة الطماطة . ووجدت اختلافات معنوية وفقا لمساحة المشتل ,عدد سنوات الخبرة في زراعة الطماطة ونوع مهنة الزراعة . وتضمن البحث عددا من التوصيات والمقترحات

الكلمات المفتاحية : مستوى المعارف , زراع الطماطة , ناحية زمار

Introduction

The agricultural field one of the axes at the global economy : that achieved in the agricultural, industrial and commercial fields ,it has main role in the societies variances development (21) ,therefore agricultural extension has a vital role in rural and agricultural development; it is the main source of technology distribution; it gives the farmers explaining the use of resource for sustainable rural development; in relevant and timely supplying of the information to the farmers has vital role in growth the agriculture production and marketing polices (18), but growth corporate group needed to achieve them successful it isn't an easy issue(4) cultivators appearance several problems: not adequate motivation to progress themselves ;weak of information and aids in animal and plant products; accessing market state and price knowledge(3), according to the preceding; transfer of the agricultural techniques to cultivators includes the important stage on a true methods and treatment several of problems (10){transferred from Swanson ,1997} for that the researchers ; extension workers; and cultivators should analysis and identify of difficulties and work together dependent on the multiple specializations research groups reaching to possible solutions, so test them in the research centers and at the farm level to adapt solutions with cultivators conditions ,so evaluation the cultivators to the agricultural techniques and suitable level. This design assumes that agricultural research should begin and end from the farmer's field, and cooperation with (the researchers; extension employees ; and cultivators) as shown in the following shape.



Figers 1. Illustrate Rhoades and Booth pattern transferring the agriculture techniques from cultivators to cultivators (10)

knowledge is a key variable to seek or focus or to acquire or to create or speech or to share and to use ;knowledge manage of cultivated land are important to support these tasks (7). Many activities related to extensional policy formal and informal teaching ; will assess in changes of achievements are happening as a result of the combination of development concepts (15). Lack of knowledge is an important issue as an inability of cultivators to successfully conduct any action as long as they need to obtaining

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the knowledge and skills; extension services are dangerous to increase agriculture production(6), the decision of relevant agricultural research is a long _standing comparative with scientific circle.(5) We can use many methods to relocation the knowledge to tomato cultivators like ,group discussion ,method of demonstrative ,training meeting ,result demonstrative, scientist lectures on cultivation ,progressive mustard cultivators lecture; audio _visual aids ;cultivators fair ;extension lecture; tomato crop competition on mustard(17), originality tomato agriculture was the most clear ability which needed for success the agriculture knowledge and culture(9). The knowledge principles identify that information to development and make cultivators based decision ;and used it to drive efficiency ;service improvement ; reducing risks and increasing of advantages ;these are achieved at true knowledge ,(19) knowledge manage includes a set of managing events which deals with transport; creation; adoption; sharing; storage and applications of knowledge(23),the survey refers to a questionnaire ; services have a number of advantages of cultivators information ;allow collecting a big rate of data ;informal to administer focused and don't spend time and money.(12)We can develop method to progress organizational learning ;share facts ;innovate experiences; organizational arrangements to streamline knowledge process and become more relevance to need of farmers (13),therefore it is a necessary to examine the tomato cultivators knowledge level of in Zomar District to expose weakness in it and to transfer agriculture technologies to tomato cultivators , and extent the techniques which needed and finally increasing the crop and developing tomato seedling production quality and quantity locally ; Given the lack of previous studies directly relevant to the topic; focused on the following studies: The first study revealed that (8.75%) of cultivators have a low knowledge level, (51.25%) have a medium ,(40%) high level of knowledge in tomato developing .There knowledge in tomato developing sides were gradually :maturation ,gathering ,marketing ,diseases ,and insect which invade the crop .There are significant relationship between knowledge and variables (Cultivated area of tomato ,income , agriculture information incomes ,and there aren't with educational level type of farm ownership , experience in agriculture (2).While Mahmoud found in his study there were significant correlation between extension needs and the following variables: academic achievement, number of agriculture working years, the level extension communication with information sources and found a weak correlation with the method, land area, and no significant correlation with cultivated area of tomato and productivity and type of cultivation (14). As well as study of Al-Abbassi et al, found that knowledge level of rural youth in the summer vegetables was small and there were no significant variances in the level of their knowledge according to the following factors: Cultivated area of tomato, education level, type of vocation, number of working years in agriculture, agricultural land area, information sources (1).

So Ghadhaib and Hussain showed in their study's results a significant relationship between information sources and training needs of cultivators irrigated wheat and willingness to change,while there wasn't a significant relationship with the number of years of experience in agriculture, and previous agricultural training (8).Another study showed that knowledge level 0f majority of tomato farmers were medium to high so found (100%) of farmers had knowledge about use drip irrigation and fertilization systems in cultivation of tomato under the precision farming ,more than 90% of farmers had knowledge on staking practice ,use of appropriate spaces ,and optimum seed rates ,so observed that very little knowledge in using yellow sticky trap (20),the study results were (81.9%) of the farmers have intermediate knowledge to high ,the order of fields was first according to the priority : Infection appearance, the results also illustrated that: There have a significant correlating relationship with each of: Education level ,age, tomato planted area , and sources of Agricultural. Information , there non a significant correlation with the number planted years and farm possession

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kind (9),so the results of another research revealed that good answers from the farmers ,quality of their knowledge was limited ,so reveled need to more information and reinforcement ,most of the farmers rely on other farmers and nonexistent participation of agricultural extension employees(16). Despite of the great development on the level of researches and scientific successes; our knowledge of the essence of information; utilities; features which concerning to tomato cultivation are simple and there are many issues remained need to further seek and deeper examination ,the knowledge is one of the important requirement ,and to overcome this problems must know the weakness points and inadequate of their performance of tomato cultivation; to construct improvement plans and programs designed to provide them by correct knowledge .

The aims of current research are as follows:

1. Identify tomato cultivator knowledge level in Zomar District/Nineveh province in tomato seedling production in all fields in general

2. Identify degree of knowledge level of tomato cultivators in each knowledge field: preparation of seedling ; service the seedling in plastic household ; process of choice and pick up the seedling ,and planting the seedling in the arboretum land . And in each knowledge item.

3. Identify the variances in the knowledge level according to following variables: cultivated area of tomato; educational level; experience years of tomato farming; land ownership; dependent information sources; previous training and type farming career

Research Hypothesis

There are no significant variances in the knowledge level differently each of the study variables

Materials and methods

Study population consists of all the tomato crop cultivators of Zomar District in Nineveh Province which are {92} cultivators ; questionnaire was prepared for collecting data collection and ; consisted of two parts :The first one consisted of special and communication variables : Cultivated area of tomato; Educational level ; the experience years of tomato farming ; land owner ; dependent information sources ; the type of farming career ; previous agricultural training ; this variable have been removed out of the study; because that; all cultivators haven't combined with agriculture training course in tomato cultivation.

While the second one consists of test to measure knowledge level of the tomato cultivators in tomato seedling production; which covered four fields of knowledge: preparation of seedlings {15} item; service the seedling in plastic household {7} item; process of choice and pick up the seedling{9},and planting the seedling in the arboretum land {3} ; the total number of these items in test were primarily {45} item .The content validity have been tested by offering the questionnaire to the specialists in department of horticulture - College of agriculture and forestry- Mosul University; so extreme comparisons validity has been used when applying the test(the second part of questionnaire) on a random sample of [30] tomato cultivators during January 2019 (was taken from another district out of the involved population) then value of the calculated T was {15.1} degree; which was larger than tabular T value at level (1%) that mean that : test has a capability to distinguish between both groups :high and low knowledge level , then a reliability tested by using Kuder-Richardson equation using the previous sample ;the reliability coefficient was {0.88} which clear that: high reliability of the test and we can dependent on it in the measurement . Also found the item discriminatory strength to amended items ,the range from (0.2 – 0.29)were remained ,(items less than 0.20 and more than 0.29 were neglected) so it has been found of item difficulty coefficient; then removed items that were outside the range (0.20–0.80) thus items at the final test were {34} item from the types: multiple choice ; there is three alternatives ; one of them chosen by the respondent; also from type true and wrong ,and from type completion items ;then require from cultivator complete the lack.

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The research data was collected during(March-April 2019) ; and analyzed by using statistical analysis program (Minitab V13.5) using tools : Percentage ;Standard deviation; Arithmetic Mean ; Median; Mann-Whitney to variables divided into two categories ;Kruskal _Wallis for variables divided into three categories and more (22) that because data distribution wasn't normally. The knowledge level were determined by summation the degrees of all knowledge fields; also the knowledge level of each field by summation degrees of all their knowledge items .

Results and discussion

First :Identify tomato cultivator knowledge level in Zomar District/Nineveh province in tomato seedling production in all fields in general: table [1] shows that **44.565 %** the ratio of the cultivators have a medium knowledge; **29.347%** the ratio of the cultivators have a low knowledge **26.086%** the ratio of the cultivators have a high knowledge, then the theoretical range was (0-34) while the actual range was(11-23) .

Table 1. Distribution of cultivators according to knowledge level in tomato seedling cultivation.

Knowledge categories	Number	%
Low (11-14) degrees	**27**	**29.347%**
Medium (15-18) degrees	**41**	**44.565 %**
High(19and more) degrees	**24**	**26.086%**
The total	**92**	**100 %**

lesser value = 11; highest value = 23 ; Mean =15.64 standard deviation = 1.56

As demonstrated in table [1] the knowledge level of tomato cultivators is intermediate in the first followed by low category and high category that because cultivators in this district depend on each other to receive the tomato agriculture information and need to join training courses to Strengthening their information , support education and awareness and complete deficiencies in their knowledge and increase concerns in some areas because developing new knowledge constantly and developing day after day. This result agreed by Al-Abassi and others(1) and Nguettiand et al (16) also different from; Altalib (2), Sangeetha,et al (20) and Ganim and N.A.B. (9)

Second: Identify the degree of knowledge levels in each knowledge field and in each item: table [2]

As clear in table (2) the highest level of knowledge of cultivators is the preparation of seedling field which indicates that cultivators have useful knowledge in this field

Third :To identifying variances in the level of knowledge of cultivators according to variables:

1.Cultivated area of tomato: Cultivators have been distributed in to three categories according to cultivated area of tomato: medium (43.47%), large (35.86%),and small (20.65%).Result shown a significant differences in cultivators knowledge according to the cultivated area of tomato ;the calculated value of Kruskal-Wallis (10.56) which is more than the tabular value at 5%, as clear in the table [3], this result different with research hypothesis ; which mean that as the cultivated area of tomato increases, this led to an increase cultivators interests and their concern not to waste their money which spent in their land; this result agrees with the findings of Altalib (2)and Ganim and N.A.B.(9); differs with the findings of Mahmoud (14) Alabasi and others (1). so results showed that the highest cultivated area of tomato is 5 Donum and less cultivated area of tomato is 1 Donum with mean(51.23)and standard deviation(4.8)

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Table 2. Order of the fields and items according to the arithmetic Mean of cultivators knowledge level

The knowledge fields and items	arithmetic mean	Order
	0.937	**1**
First: preparation of seedlings	0.13	2
1-The perfect time to seeding before culture.	0.13	2
2-Know the method of preparation of seed lings using	0.13	2
plastic tunnel.	0.12	4
3-Know the method of preparation with planting the seed	0.10	6
in cups and cans.	0.10	6
4- Know type of the past on it.	0.04	8
5- Know the method of prevention of the inset.	0.03	9
6- Know of the detecting the covers.	0.02	10
7-The ratio of soil fixation of each : soil, mad, organic,	0.017	11
fertilizer clay and dab.	0.015	12
8-Hot to maintain exports from his wisdom.	0.002	13.5
9-How to preparation of seed lings using wooden boxes.	0.002	13.5
10- How to preparation of seedlings within plastic cells.	0.001	15
11- How to preparation of using Giff Butus7.	**0.560**	**2**
12-Type of user solution to cleanse the seed lings trays.	0.12	1
13-Ideal ratio to nursery seeds vitality.	0.11	2.5
14-The distance between line and other.	0.11	2.5
15-The ideal period to plant tomato seeds.	0.10	5.5
Second: Service the seedling in plastic household.	0.10	5.5
1-Time to detect plastic household covers.	0.10	5.5
2-The temperature during the period of export growth.	0.10	5.5
3-The moisture during the period of export growth.		
4-The quick procedures to prevent girdling death.	**0.559**	**3**
5-Period of periodical spray with fluid pesticides.	0.22	1
6-Type of fluid pesticide using for tomato seedlings.	0.18	2
7-Degree of spray abundance from the soil surface.	0.15	3
Third: Planting the seedling in the arboretum land	**0.550**	**4**
1-Avoid choice the sick seedlings before transferred to the	0.11	2
arboretum land.	0.11	2
2-knowledge the procedures of conditioning the seedlings	0.11	2
such as full cover of the root ,added compost at the first	0.05	5
irrigation .	0.05	5
3-How to deal with seedling in the tunnels when	0.05	5
temperature change.	0.04	7
Fourth: Process of choice and pick up the seedling.	0.02	8
1-The fit length to pick up tomato seedlings.	0.01	9
2-The fit diameter to pick up tomato seedlings.		
3-Real papers number to pick up tomato seedling.		
4-Ideal period to move seedlings before flower process.		
5-Quality of irrigation water during pick up the seedlings.		
6-Conditions of selected seedling.		
7-Ideal period to planting seedlings in the earth.		
8-The place of seedlings keeping.		
9-Shure on the suitable environmental conditions in the transportation vehicle of the seedlings		

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2. Education level: Cultivators have been distributed in to four categories according to educational level : primary (44.56 %), illiterates(30.43%), intermediate (14.13%) and high school(10.86%).Result shown no significant differences in cultivators knowledge according to educational level ;the calculated value of Kruskal-Wallis (20.76) at 5%, this result agreement with research hypothesis, this is because the educated cultivators or not educated should listen and learning agricultural information concerned with tomato farming . This result is agree with Ganim and N.A.B. (9)and varies with the conclusion of Mahmoud(14) consistent with the Al-Talib (2) ; Al Abasi et al,(1).

3.Number of experience years of tomato farming: Cultivators have been distributed in to three categories according to the number of experience years: middle (7-12) years (39.13%) ,few (1-6) years (31.52%) ,big (13-18) years (29.34%). Result shown a significant differences in cultivators knowledge according to the number of experience years ;the calculated value of Kruskal-Wallis (2.90) which is more than the tabular value at 5%, as clear in the table [3], this result different with research hypothesis; and indicates that the more years tomato farming and farm the more the accumulated experience and knowledge; he learns a lot of things over the years; This result is consistent with Ghatheeb and Hussein (8),Al-Abbassi et al (1);and varies with Al Talib (2)and Ganim and N.A.B. (9).The less number 1 year and the highest number 18 years with (4.89) mean and (2.9) standard deviation

4. Land ownership: Cultivators have been distributed in to three categories according to ownership of the land : The owner of the land(56.52%), employees(34.78%), contractors (8.69%), result showed no significant variances in knowledge level according ownership of the land using Kruskal-Wallis at 5% ; this result agreement with research hypothesis, this means that any cultivators; owners of the land; or employees working in land or contractors , did not change in the cultivators level of knowledge; this study consistent with the study of al Talib (2) Ganim and N.A.B. (9) and .

5. Sources of information: Cultivators have been distributed in to Three categories according to information sources: tomato cultivators (51.12%),agricultural extension employees (26.3%),agricultural supplies agent (22.2%) this result agreement with research hypothesis ,this result means that most of the farmers rely on other farmers to overcome the problems which appear during agricultural process to tomato seedling production this result agreement with Nguettiand others(16). So result shown no significant differences in cultivators knowledge according to the information sources ; using Kruskal-Wallis at 5% as clear in the table [3], this result is consistent with the conclusion each of Mahmoud (14) ; Ghatheeb and Hussein (8),Ganim and N.A.B. (9) and Al-Abbassi et al,(1) and varies with Al Talib (2)

6. **Previous training** : It clears from this search there isn't any previous training among farmers therefore this variable has been deleted .

7. **Type of farming career**: Cultivators have been distributed in to two categories according to type of farming career: main(63.04%), secondary (36.95%).Result shown a significant differences in cultivators knowledge according to type of farming career by using Mann_ Whitney test ,the calculated value of Z (4.55) which is more than the tabular value at 5% , show table [3] . This result different with research hypothesis ,this is might the cultivators who practice farming as a main vocation focus all of their efforts and interests on farming in comparison with cultivators who practice farming as a secondary vocation. This result differs with study of Al-Abbasi et al (1).

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Table 3. Difference in the knowledge level according to several variables

Variable	N	%	Median	The average rank	H value	z value	P Value Significant
Cultivated area of tomato:							
Small (1)Donum	19	20.65 %	1	44.87	10.56*		
Medium (2) Donum	40	43.47 %	2	40.11			0.03
Large (3 and over) Donum	33	35.86 %	1	37.87			
Education level :							
Illustrate	28	30.43%	1	43.7			
Primary schools	41	44.56 %	2	42.9			
Intermediate	13	14.13 %	1	41.5	20.76		N.S 0.88
High schools	10	10.86 %	7	44			
Number of the experience years of tomato farming :							
Few (1-6) years	29	31.52%	1	30.66			
middle (7-12) years	36	39.13	2	23.98	*2.90		0.03
big (13-18 years)	27	29.34%	2	45.70			
Land ownership:							
The owner of land	52	56.52%	2	54.9			
Employees	32	34.78%	1	39.2	35.8		**N.S** 0.34
Contracted	8	8.69%	2	74.0			
Sources of information :							
tomato cultivators	47	51.12%	2	33.5			
extension employees	24	26.3%	2	42.9	12.86		**N.S** 0.92
agricultural supplies agent	21	22.2%	2	32.66			
Type of farming career :							
The main 1	58	63.04%	1	49.7		4.55*	0.04
Secondary 2	34	36.95%	1	34.62			

(*)Refers to the significant value at the level of 5% (**) refers to the significant value at the level of 1%

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Conclusions

1. The vast majority of tomato cultivators in Zomar District have a big lack in knownledge of tomato seedling production ,that is (74%)from cultivators were within two categories; medium and low knowledge ,this due to presence a big necessary to increase their information and supported it .

2. There is a lack of cultivators knowledge particularly in process of choice and pick up the seedling field followed by planting the seedling in the arboretum land field in comparison with other fields ; which required more knowledge and rich experience to the cultivation of tomatoes in relation to these fields particularly .

3. The increase of cultivated area of tomato , increase of experience years in tomato farming and focus on cultivators who takes the agriculture as a major career ;are important variables to increase the knowledge of cultivators in tomato seedling farming .

4. The educational level; Land ownership ; and dependent information sources of tomato agriculture show a weak role in increase the knowledge of cultivators in tomato seedling farming .

The recommendation:

1. Setting up training courses related to tomato seedling production in coordination with each of : agricultural extension and training center/ Mosul; Nineveh agriculture Directorate; and agriculture college .

2. Focus on the outstanding tomato cultivators as an agricultural information resources ; this to motivate other cultivators and encourage him to apply the true methods .

3. Provide information sources of books and publications specializing in tomato cultivating and especially to cultivators who have a good level of education.

4. Continue to expand the tomato cultivators of agricultural support by the Ministry of agriculture; and applied by the extension center; in assistance the Ninevah agriculture Directorate to increase number of cultivators in this field and depending on local production

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