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THE AGRICULTURAL EDUCATION IN THE REPUBLIC OF IRAQ

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Abstract

The study is situated in the field of agriculture and the main subject is education of agriculture in Iraq, within the context of creating a clear vision of the current status and the evolution of agricultural education in Iraq, by comparison with neighboring countries such as Iran, Jordan, Saudi Arabia, Turkey, and Syria. Given the fact that agricultural education is related to the field of education as well several factors will be taken into account, such as the education system in Iraq and neighboring countries, general education in the world, professional or vocational education and technical education also. The Iraqi educational system will represent one of the main cores, which is why a bigger section is dedicated to it. The results and conclusions section contain the main conclusions and the findings are discussed, and recommendations are concerning the findings.

Key words**:** *education, agriculture, statistics, Iraq*

INTRODUCTION

According to UNESCO, education is considered as an "organized and sustained instruction designed to communicate a combination of knowledge, skills and understanding valuable for all the activities of life".[15]

Agricultural Education represents the teaching of agriculture in order to prepare students for entry level jobs or to further education to prepare them for advanced agricultural jobs. Agricultural education can be taught at the elementary level, middle school level, secondary, post-secondary and adult levels. Elementary agriculture is taught in public schools and private schools as well. Vocational agriculture trains people for jobs in such areas as production, marketing, and conservation, whereas college agriculture involves training of people to teach, conduct research, or provide information to advance or extend the field of agriculture and food science or agricultural technologic. General education agriculture informs the public about food and agriculture.[12]

The sustainability of literacy greatly depends on evaluating adult education programs in order to assess their impact on learning acquisition. The Arab countries provide various modalities in adult education to address program quality, adequate teaching material, lack of incentive among learners, special population needs, community participation, and use of technology. Such concerns have been addressed in a multiplicity of innovations launched by various Arab countries[2].

Iraqi education is known to be very demanding throughout the Middle East, taught in both Arabic and English. Iraqi graduates have an advanced knowledge of complex subjects such as chemistry, math (algebra, calculus), biology and other scientific fields of study. The official educational cycle in Iraq extends to 11 years, including 6 years of mandatory primary education, which starts from the age of six years, followed by 3 years of intermediate school, then 3 years of secondary education, which is divided into general secondary of scientific and literary and secondary vocational industrial, agricultural or commercial. Students who finish high school and get the minimum qualifications for post-graduation study are able to enroll to universities or technical institutes.[16]

Vocational training is a branch of the secondary education system. The Iraqi students have the right to choose the vocational secondary education immediately after the intermediate stage instead of

continuing education in the academic year.

The vocational centers aim to provide students with professional and technical skills in order to prepare them to engage in various types of careers after graduation, the vocational training stage being extended to three years leading to public examinations. The top 10% with the best scores of the students can continue their studies in technical colleges[12][19]

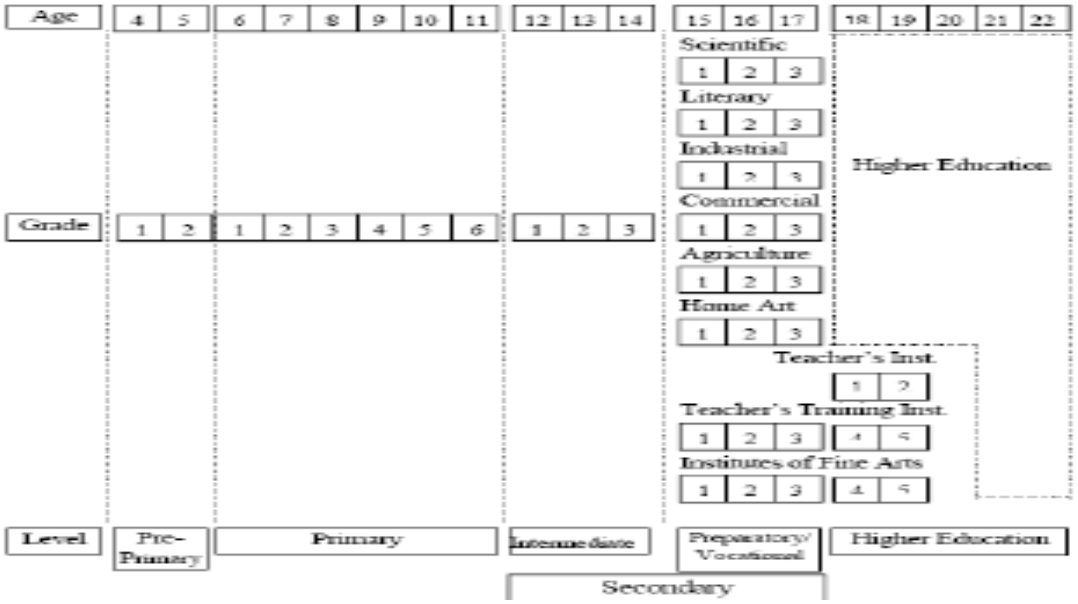

Fig 1. Structure of the education system of Iraq (World data on Education Donnees mondiales de l education, VII Ed. 2010/2011, pg. 5)

Intermediate School. After primary school, Iraqi students attend Intermediate grades 7-9, and upon completion of the 9th grade, students take the National Intermediate Baccalaureate Examination after which, if passing, students can then enter a secondary general or vocational school. Some schools in Iraq include only intermediate stage and therefore the students have to complete the preparatory education (secondary level II) at another school. Most schools, however, have intermediate and secondary stages. Because the local trainers have been isolated from international developments, they are in need for modernizing and some need training from foreign teachers.[11]

Intermediate school students take 34 classes per week including subjects of Islamic education, Arabic language, English, Science (Physics, Chemistry and Biology), history, geography, social studies, mathematics, fine art education, and military physical education. The female students take additional lessons in household education.

Secondary School. Students attend Secondary School from 10-12th grades in Iraq, choosing from two categories: General and Vocational. General schools offer education in the field of humanities or science. Vocational schools offer Agricultural, Industrial and Commercial education.[10]

In order to complete Secondary School and receive a certificate of completion, each student must take a Baccalaureate exam, after which, if a student does not pass this exam on attempt one, he/she is able to attend school for one more year and try to pass it again. If the student does not pass the exam a second time, he/she is not eligible to attend any other college or school. According to the Ministry of Education, secondary schooling in Iraq faces severe problems, such as a lack of infrastructure of schools and educational institutions, a lack of qualified teachers, the failure of the curricula to follow the developments of the global academic standards and a lack of textbooks and teaching aids. [9]

Technical and Vocational Training. Vocational training is a branch of the secondary education system. The Iraqi students have the right to choose the vocational secondary education immediately after the intermediate stage

instead of continuing education in the academic year. The vocational centers aim to provide students with professional and technical skills in order to prepare them to engage in various types of careers after graduation. The vocational training stage extends to three years leading to public examinations. The top 10% with the best scores of the students can continue their studies in technical colleges.[8]

Although the students have the freedom to choose among the main four branches of vocational education, this right does not exist always in practice, either because of lack of containment of all branches at the vocational school, the geographical distribution of schools, or availability in some places and non-existence of them in others.

Development of education. In northern Iraq, UNESCO has held a number of diverse in-service training courses for teachers in various stages of secondary education and most of the stages of higher education as part of its duties under the Oil for Food program. More than 1,000 teachers, inspectors and headmasters have benefited from these courses in a variety of subjects during 2001 and 2002.

After the invasion of Iraq, due to the lack of support for education, before 2003 it appeared that approximately, 80% of Iraqi schools (15,000 schools) needed reform and rehab for sanitary facilities. There were an estimated 240,000 pupils in Iraqi schools and universities before 2003.

The political changes from Iraq after 2003 and the transition to democracy have led to a reform of the educational system. The philosophy on which the new educational system was based has been established in 2008, and relies on the moral and religious values, perceived as foundations of the social, educational and scientific processes and on the humanistic values, which is respecting the human dignity of all individuals and the family as foundation of the society. The new Curriculum has been drafted with the technical support of the UNESCO International Bureau of Education, and includes the following principles:

- encouraging excellence and creativity in all the areas of intellectual life, scientific work and the arts;
- increasing the enrollment of learners in educational institutions;
- paying particular attention to the population of rural and remote areas;
- strengthening the role of education in consolidating tolerance and understanding among people based on the principles and practices of learning to live together peacefully at national, regional and international levels.

According to the National Development Plan 2010-2014, Iraq is seeking to be a peaceful and stable nation under the auspices of a federal democracy. In Iraq, the Ministry of Education has the function to elaborate the educational policy, plan and monitor implementation, develop the curriculum, manage schools, teachers and other educational personnel, develop standards for educational guidance and vocational counselling, develop standards for assessment and examinations. Education is under the supervision of the Ministry of Education, Kurdistan Region (According to the Constitution of 2005).

MATERIALS AND METHODS

This study involves the use of theory and statistical data. The theory may or may not be made explicit in the design of the research, although it will usually be made explicit in presentation of the findings and conclusions. In the paper the fallowing indicators have been used: arithmetic mean, coefficient of variation, average annual growth rate, ecologic indicators and statistical indicators.

The formulas used for to calculate these indicators, are:

$For\ the\ arithmetic\ mean = \bar{x} = \frac{\sum xi}{n}$, where $\bar{x}$ = the arithmetical mean, xi= the average production values for a number of years (i); n= number of years taken into account.

Annual growth rate= $= n\sqrt{\prod (p1/p0) - 1}$; where: ∏p1/po = the chain indicators product during the analyzed period.

The research method followed the following steps, beginning with scientific databases research of the relevant articles concerning education and agricultural education in Iraq,

neighboring countries and the world, then the development of Iraqi agricultural education, followed by an analysis and selection of the relevant data and the last step was extraction and summarization of the results based on interpretation and evaluation of data.

The 2000-2004 data on literacy is derived from the March 2004 UNESCO Institute for Statistics (UIS) Literacy Assessment which uses directly reported national figures taken between 1995 and 2004, or when not available are based on UIS estimates for 2002, or EFA Global Monitoring Report 2005.

RESULTS AND DISCUSSIONS

In 1980 the Arab States were able to attain 51.3% literacy rate, an increase of 11% from the previous decade (40.8%)[17]. For the age group

Table 1 Evolution adult literacy rate, population 15+ years, both sexes (%) in Iraq and adjacent countries.

Country		MU	1991	2002	2004	2009	2011	2015	Mean	sddev	C%	Annual growth rate
Iran	both sexes	%	65.53	77	82.44	82.96	83.63	87.17	79.79	7.71	9.67	5.87
	vs. 1991	%	*100*	*117.5*	*125.8*	*126.6*	*127.61*	*133.02*	x	x	x	x
Iraq	both sexes	%						79.72				
Jordan	both sexes	%		89.89	91.13	92.55	95.9	98.01	93.50	3.38	3.61	2.18
	vs. 2002	%		*100*	*101.38*	*102.96*	*106.69*	*109.04*	x	x	x	x
Syria	both sexes	%		82.89	80.84			86.3	83.34	2.76	3.31	2.03
	vs. 2002	%		*100*	*97.53*			*104.12*	x	x	x	x
Turkey	both sexes	%	79.23		87.37	90.82	94.11	95.69	89.44	6.54	7.32	3.07
	vs. 2004	%	*100*		*110.26*	*114.62*	*118.77*	*120.77*	x	x	x	x

Data processed by: World Development Indicators, http://data.worldbank.org/data-catalog/world-development-indicators[20]

15-24, the achievements were greater, eleven countries attained a literacy rate of 90% and over well above the world average of 87.6% (Jordan, UAE, Bahrain, Syria, Qatar, Kuwait, Algeria, Libya, Saudi Arabia, Oman, Tunisia), with Jordan scoring the highest (99.4%)[19].

Such "literacy abundant" countries are contrasted to another "literacy deprived" group of five states with the largest Arab population all-scoring below the developing countries average of 85.2% (Sudan, Egypt, Morocco, Mauritania, and Yemen)[3].

During 1999 -2014, the duration of compulsory education has been of 8 years in Iran (except for 1999, when it was 5 years), 6 in Iraq, and 10 in Jordan. In Syria and Turkey, the evolution appears to be more obvious. During 1999-2007, the duration of compulsory education was of 8 years in Turkey, and since 2012 of 12 years. In Syria, the duration of compulsory education was 6 years and since 2005 it became of 9 years.[19]

In Iran, during 1991-2015, the adult literacy rate has a mean of 79 %, in Iraq a mean of 79.72 % (in 2015), in Jordan a mean of 93%, and in Syria a mean of 83 %. The more constant literacy rate is registered in Turkey for both sexes, 89.4%.

During 2000-2014, employment in agriculture has represented 17.9% of total employment in Iran, 1.8% in Jordan and the highest rates appear to be in Turkey.

Table 2. Evolution of employment in agriculture (% of total employment), în Iraq and neighboring countries during 2000-2014

Country	MU	2000	2006	2008	2011	2014
Iran	%		23.2	21.2		17.9
	vs. 2006			91.4		77.2
Iraq	%		29.7	23.4		
	vs. 2006			78.8		
Jordan	%	4.9	3.1	2.6	1.7	1.8
	vs. 2000		63.3	53.1	34.7	36.7
Syria	%	32.9	19.6	14.5	13.2	
	vs. 2000		59.6	44.1	40.1	
Turkey	%	36.0	22.6	22.1	22.8	19.7
	vs. 2006		62.8	61.4	63.3	54.7

Source: Data processed by: World Development Indicators, http://data.worldbank.org/data-catalog/world-development-indicators

As is the case for all social sectors, in Iraq the government plays a major role in education. The Ministry of Education is responsible for pre-school, primary and secondary education; higher education falls under the Ministry of Higher Education and Scientific Research. A large number of other ministries is also responsible for specialized education institutes.

The Ministry of Higher Education and Scientific Research in Iraq consists of six departments, defines the higher education policy and supervises the administration and organization of the higher education system: universities, colleges and technical institutes. Both the private and the public universities are autonomous in Iraq regarding the financial, administrative and technical matters. In Iraq, the Ministry of Agriculture and Irrigation, just like other ministries, can administer vocational training centers in order to produce skilled workers.[9]

In June, 31, 2015, 144 students were enrolled in formal education (grades 1 – 12); 15,508 in camp settings, and 15,636 in non-camp settings. Of the 29,338 children enrolled in basic education (grades 1 – 9), 69% were boys and 71% girls. 3,810 students were benefitting from

non-formal education activities. There are currently a total of 115,000 students enrolled in the 13 public universities and 11 private universities of the Kurdistan Region. The vast majority of these students attend public universities, which tend to be much larger than private universities and do not charge tuition.[9]

Most of the universities in the Region are very new: with the exception of Salahaddin University, nearly all of the local universities are less than two decades old. However, because of the Region's stability, Kurdistan's universities are drawing higher-level professors and students from historically more prestigious universities in Baghdad, Basra, and Mosul. While this process is providing the universities a boost in competitiveness, it also places further stress on the capacity of the Region's higher education system.[14]

General secondary education in Iraq

- 4,042 general secondary schools (51% Intermediate level, grades 7-9; 38% 'Secondary' (grades 7-12), 11% Preparatory (grades 10-12)
- 49% boys schools, 33% girls schools, 18% co-educational
- 48% single shift, 50% double shift, 2% triple shift
- 1,443,436 students (boys 62%, girls 38%)
- Gross Enrolment Ratio: 40% (boys 49%, girls 31%)
- Teachers: 76,216 (41% male, 59% female) [14]

Table 3. Enrollments in Secondary education during 1970/2003 and 2012/2013

Specification	MU	Male Students	Female Students	Total	
Mean 1970/2003	no	896,776	546,660	1,443,436	100.0
	%	62.12	37.87	100,00	X
2012/2013	no	x	x	810939	56.18

Data processed by: Statistical Appendix, Worldbank [22]; Investment Map of Iraq, 2014, Republic of Iraq Presidency of Council of Ministers National Investment Commission, Project on 16/4/2014,pag 148[21]

Higher education in Iraq:

- 20 universities, 37 technical institutes, 9 technical colleges
- 201 university colleges
- 251,175 university students (42% female) and 65,908 students in technical institutes/colleges
- 19,112 staff (43% female) in universities and 2,837 in technical education
- 28 university research centres
- 5 universities in Baghdad enroll 47% of all students.[14]

In general, the number of the students in the universities and institutions is very low, only 10% of the population in the age range of (18-23), while in the developed countries it reaches (40%) of the population, and this decline in the university education is due to the decline of the income because of the wars, embargo, and brutality, pushed the youths to go directly to work rather than higher education.[16].

UNESCO assisted the Ministry of Education and the Ministry of Higher Education to complete the school year 2002/2003, thereby reassuring parents and students that they could look forward to a return to normalcy and peace. During this critical phase, support was provided for end-of-year examinations and for preparing the new school year.

Transport, materials and revised textbooks in the fields of mathematics and science were provided and the education for girls was

emphasized by the completion of a secondary school model for girls in a densely populated area of Baghdad, adapted to the local environment and climatic conditions. The establishment of a database on secondary education and the provision of technical equipment to process and manage this data further assisted the Ministry of Education. At the level of higher education, international donor support was mobilized through the creation of the International Fund for Higher Education in Iraq, with the initial contribution of $ 15 million from Qatar. [16]

During this period, Iraqi officials from the Ministry of Education and the Ministry of Higher Education visited UNESCO Headquarters to convey directly their immediate concerns. Given the education system's wide range of needs and competing priorities, UNESCO undertook a needs assessment immediately after the conflict, with the generous financial support of the Japanese Government.[16]

Evolution of Iraqi Educational Agriculture.

Agricultural production occupies about 9.5 million of Iraq's 43.7 million ha and represents the second largest contributor to the national gross domestic products.[4] For Iraq, educational agriculture has therefore always been an important factor. The first agricultural vocational school established was in 1926, at Al-Rustemieyh[15] as a post-intermediate three-year college, which closed after three years of operation.

Other primarily vocational schools were opened by the Ministry of Education, which after operating as secondary and sometimes intermediate level, had finally materialized in 1965 as full boarding agricultural secondary schools, offering a two-year post-intermediate course, and later a three-year post-intermediate course. The total enrollment at these schools during 1968-1969 was of 3,574 students and an average of 1200 graduates per year. The main criteria for admission was age of over 18 and the order of merit in the intermediate and secondary examination.[5]

The second level of agricultural education was the High Agricultural Institute which was established in 1965 on the campus of the Faculty of Agriculture, at Abu-Ghraib, under the sponsorship of Baghdad University. The program consisted of a two-year calendar course and the main focus was agricultural sciences, followed up by a specialization in agronomy and horticulture, food technology, plant protection and others [15]. Number of students of the secondary education schools are estimated by (810,939) for the school year 2012-2013[21].

The vocational schools in Iraq are divided into 4 sections, agricultural, industrial, commercial and fine arts and the number of these schools in Iraq is (597) for the school year 2012-2013, (67%) of which are industrial, (29%) commercial, (2%) agricultural and (2%) are for fine arts[21]. Surveys results have shown that the number of students admitted to Iraqi universities, private colleges and technical educational institutions reached (554,587) students for the year 2012-2013 while their number for the year 2010-2011 was (476,377) students[21].

At the moment, educational agriculture can be pursued at universities (the most common are Mosul and Baghdad Universities), continued in research centers and by continuous training for farmers through the programs and workshops offered for the purpose of extending agriculture. The SBAR is the largest national agricultural research (NARS) institution: it represents 26% of the potential research years of the NARS. Its main mandate is agricultural research which mobilizes about 75% of the time of its professional staff. Other activities cover community services (soil analysis, seed production, etc.), extension and training.[18]

In the field of Iraqi agricultural extension, the Iraqi educational system is an important factor. Below, in table 5, the main agricultural educational topics identified as a critical need in 2013 are listed. The information was taken from the Journal of International Agricultural Extension Education, Volume 20 Number 1, 2013.

The Iraq Agricultural Extension Revitalization (IAER) Project, was a partnership between United States Department of Agriculture/Foreign Agriculture Service (USDA/FAS) and United States Department of Agriculture/National Institute for Food and

Agriculture (USDA/NIFA). [1]
The SBAR consists of six main agricultural divisions: agronomy, horticulture and forestry, date palms and tissue culture, soils, animal resources, and plant protection. Research activities include both crop and animal production.
Within crop production, priority is given to cereals (wheat, rice, barley, corn) as they represent the main crops for human consumption. Attention is also given to industrial crops (cotton, sunflower) and horticultural crops. Research is also conducted on forestry, fisheries, agricultural economics, agricultural machinery, etc. SBAR cooperates with CWSR - the Centre for water and soil research- through joint teams whenever necessary.
The IAER is a program that has encouraged change throughout the Iraqi agricultural system, it has encouraged cooperation between the agricultural colleges of Iraq, the agricultural extension agencies, farming associations, and rural communities.
The process has created a platform for follow-on projects to address macro issues of Iraq's agricultural system such as government funding, ministerial resources, and rural credit resources. The educational topics identified by trainees during the IAER program tended to target specific issues, as seen in Fig.2.

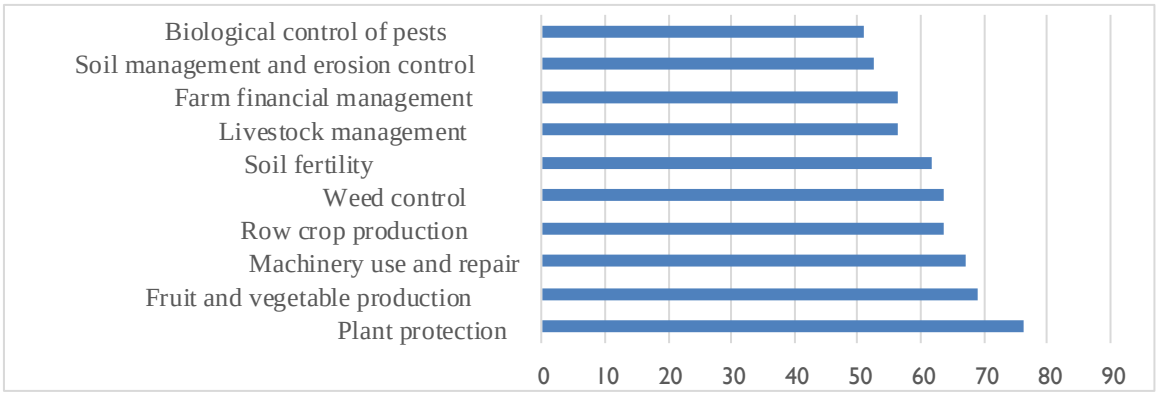

Fig. 2. Agricultural Educational Topics Identified by Iraqi Extension Personnel as a Critical Need for their Respective/ Regions(%). (Data processed by: Journal of International Agricultural Extension Education, pp.14)

In the same journal, a survey was taken the results of which showed the preferred formats through which Iraqi farmers prefer to receive agricultural information. The survey showed that approximately 46% of the mixed-gender session indicated that farmers had no formal agricultural education. According to Sawada et al, further education of Iraq extension personnel is needed and can be achieved using specialists from more developed countries [13].

Table 4. Preferred Formats through which Iraqi farmers prefer to receive agricultural information

Specification	Farmer preference	Extension agent preference	Extension agent preference vs./Farmer preference
	(%)	(%)	(%)
Personal face-to-face	64.2	74.9	10.7
Written brochures and bulletins	20.7	11.7	-9
Internet	9.5	3.8	-5.7
Video media	3.8	9.6	5.8
Written books	1.8	0	-1.8

Source: Data processed by: Journal of International Agricultural Extension Education [1]

Another agriculture extension and education program in Iraq is The ACIAR project, which has been funded by the AusAID (now DFAT) budget. ACIAR's current project in Iraq focuses on the enhancement of barley, wheat and grain–legume production under dryland

conditions in northern Iraq through the introduction and evaluation of appropriate modern varieties; and on the adaptation of improved management practices including tillage, fertilizer and weed-control techniques. This agronomic advance is being underpinned by stimulating innovation among small manufacturers of machinery in the region.[7]

The Iraq Salinity Project is an initiative of Government or Iraq, Ministries of Agriculture, Water Resources, Higher Education, Environment, and Science and Technology, and an international research team led by ICARDA- the International Centre for Agricultural Research in the Dry Areas. In partnership with the University of Western Australia, the Commonwealth Scientific and Industrial Research organization (CSIRO) of Australia, the International Water Management Institute (IWMI), Sri Lanka, and the International Centre for Bio saline Agriculture (ICBA) , Dubai, United Arab Emirates.

CONCLUSIONS

The system of education in Iraq is well established:

-Education has been free at all levels from primary to university education, indicating a high level of access to education.

-In 1980 the Arab States were able to attain 51.3% literacy rate, an increase of 11% from the previous decade (40.8%).

-The average student-teacher ratio in Iraq is relatively favorable. Moreover, nearly all secondary school teachers hold a university degree.

-In general, the number of the students in the universities and institutions is very low, only 10% of the population in the age range of (18-23), while in the developed countries it reaches (40%) of the population

-Both the private and the public universities are autonomous in Iraq regarding the financial, administrative and technical matters.

-Now, educational agriculture can be pursued at universities continued in research centers and by continuous training for farmers through the programs and workshops offered for the purpose of extending agriculture.

In the field of agricultural education, besides Universities, there are many research programs and workshops offered to farmers by International Programs, developed for the extension of agriculture.

According to recent research, approximately 46% of the farmers have no formal agricultural education and researchers agree that further education of Iraq extension personnel is needed and can be achieved using specialists from more developed countries. To this extent, now there are programs like IAER, which have encouraged change throughout the Iraqi agricultural system and cooperation between the agricultural colleges of Iraq, the agricultural extension agencies, farming associations, and rural communities. To conclude, I think developing such programs would be of great help to the development of educational agriculture, since they also promote the use of new technologies in agriculture and help the extension of agriculture.

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