T.R.

ONDOKUZ MAYIS UNIVERSITY

INSTITUTE OF GRADUATE STUDIES

DEPARTMENT OF AGRICULTURAL ECONOMICS

COMPARISON OF AGRICULTURAL HIGHER EDUCATION SYSTEMS BETWEEN TURKEY AND AFGHANISTAN

Master's Thesis

Sayed Batin ASHKAR

Supervisor

Prof. Dr. Kürşat DEMİRYÜREK

SAMSUN

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SCIENTIFIC ETHIC SUITABLENESS STATEMENT

I commit and express that in all steps of the prepared master's thesis observed the scientific ethic and academic regulations, referencing all resources which I have used directly or indirectly in the study and forming references from those publications in which I have benefited from them, Institute Guidance appropriateness of each written element and have not behaved contradictory to the situations specified in 3.chapter 9.Item of Research and Publication Ethics Directorate of Scientific and Technological Research Council of Turkey (TÜBİTAK).

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Prof. Dr. Kürşat DEMİRYÜREK

ÖZET

TÜRKİYE VE AFGANİSTAN ARASINDAKİ TARIMSAL YÜKSEK EĞİTİM SİSTEMLERİNİN KARŞILAŞTIRILMASI

Sayed Batin Ashkar

Ondokuz Mayıs Üniversitesi

Lisansüstü Eğitim Enstitüsü

Tarım Ekonomisi Anabilim Dalı

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Danışman: Prof. Dr. Kürşat DEMİRYÜREK

Çalışmanın temel amacı, Türkiye ve Afganistan'ın tarımsal yüksek eğitim sistemlerini karşılaştırmaktır. Çalışmada Ondokuz Mayıs, ve Baghlan Üniversitesi ile Samangan Yüksek Eğitim Enstitüsü olmak üzere üç üniversitede, tarımsal yüksek eğitim sistemlerinin belirlenmesine yönelik amaçlı örnekleme metod ile araştırma yapılmıştır. Çalışmanın bir aşaması olarak yapılandırılmış anket soruları seçilen üniversitelerdeki 385 öğrenci ile uygulanmıştır. Bulgulara göre, Türkiye ve Afganistan arasında tarımsal yükseköğretim sisteminde ve ünivesite eğitim seviyelerinde birçok farklılık bulunmaktadır. Örneğin, Türkiye'de tarım eğitimi veren yükseköğretim kurumlarının eğitim ve öğretim sisteminin Afganistan'dan daha iyi bir durumda olduğu fakat lisans eğitimi düzeyinde çoğunlukla tam tersi olduğu tespit edilmiştir. Türkiye'de Tarımsal Yüksek Eğitim Sistemi'nin rolü tarımsal problemin çözülmesinde Afganistan'ın halihazırdaki eğitim sisteminden daha etkin bulunmuştur. Türkiye'nin Tarımsal Yüksek Eğitim Sistemi, ürünlerin paketlenmesi, sınıflandırılaması vb. pazarlama süreçlerinde de Afganistan'ınkinden daha etkili bulunmuştur. Çalışmanın sonucu olarak, tespit edilen farklılıklar birçok özellik ile tanımlanmaktadır. Örneğin, Afganistan'da tarımsal iş olanakları Türkiye'göre daha yeterli bulunmuştur. Ancak, Türkiye'deki tarımsal yüksek eğitim sisteminin diğer güçlü özellikleri Afganistan'daki sistimenden daha etkili olduğu belirlenmiştir. Çalışmanın sonuçları iki ülkenin tarımsal eğitim sistemlerinde karar vericilerin ve politikacıların çalışmalarına yol gösterici olacaktır. Bu çalışmanın ışığında, Türkiye ve Afganistan arasındaki karşılaştırmalı üstünlüklere göre en uygun tarım ürünlerinin belirlenmesi ve ekonomik işbirliğinde verimli uygulamalar geliştirilmesi gelecek öğretim araştırmacılara önerilmektedir.

Anahtar sözcükler: Tarım, hibe-fakülteleri, araştırma, Onkokuz Mayız, Samangan

ABSTACT

COMPARISON OF AGRICULTURAL HIGHER EDUCATION SYSTEMS BETWEEN TURKEY AND AFGHANISTAN

Sayed Batin Ashkar

Ondokuz Mayis University

Institute of Graduate Studies

Department of Agricultural Economics

Master's Thesis, April / 2021

Supervisor: Prof. Dr. Kürşat DEMİRYÜREK

The main objective of the study is to compare the systems of Agricultural Higher Education between Turkey and Afghanistan. To identify the agricultural higher education systems, a survey with a purposive sampling method was conducted in three universities including Ondokuz Mayis, and Baghlan University with Samangan Higher Education Institute in the study. As a part of the study, the structured questionnaire was conducted over 385 students of the sample universities. Based on the findings, between Turkey and Afghanistan, there are many differences in the agriculture education systems at higher and university levels. For instance, the agriculture high schools' current system in Turkey is in a better situation in terms of education training than in Afghanistan but at the BSc level mostly it has been determined unlike. In agricultural problem-solving, the Agricultural Higher Education System (AHES)'s role in Turkey was found much more effective than Afghanistan's ongoing system. In terms of marketing, for example packaging, sorting, etc. skills also AHES in Turkey was found more effective than in Afghanistan. As the conclusion of the study, the illustrated dissimilarities are specified in many traits. For instance, the ratio of job opportunities was found more adequate in Afghanistan than in Turkey. But, the other features such as the current system's general positiveness in Turkey was found more effective than in Afghanistan. The results of the study will be a pathfinder for the decision-makers and policymakers to research concisely in the agriculture education systems of both countries. In the light of this study, based upon the comparative superiorities, specifying the most agreeable products between Turkey and Afghanistan, and cultivating efficient implementations in economic cooperation are suggested to future education researchers.

Keywords: Agriculture, grant-colleges, research, Ondokuz Mayis, Samangan

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Sayed Batin Ashkar

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SYMBOLS AND ABBREVIATIONS

EPRS	European Parliamentary Research Service
PE	Physical Examination/Education
EIP	European Innovation Partnership
DW	Deutsche Welle
AE	Autonomous but broadly supervised by the Education Ministry
APC	Agricultural Productivity Commission
HA	Helmand Valley Authority
MA	Ministry or Department of Agriculture
ME	Ministry of Department of Education
MND	Ministry of Natural Development
MNE	Ministry of National Economy
MEB	Ministry of National Education
YÖK	Council of Higher Education
YGS	Higher Education Entrance Exam
LYS	Undergraduate Placement Exam
ÖSS	Student Selection Exam
ÖSYM	Student Selection and Placement Center
MJ	Ministry of Justice
MHE	Ministry of Higher Education
ICT	Information and Communication Technology
TPEO	Technical and Professional Educations Office
IT	Information Technology
AHS	Agricultural High-School
CDI	Centre for Development Innovation
TMMOB	Turkish Engineer and Architect Union Rooms
WENR	World Education News Reviews
DC	District of Columbia
AHES	Agricultural Higher Education System

1. INTRODUCTION

Throughout the world, agricultural universities and faculties are playing the most important role through training and educating of agriculture professionals in bachelor, graduate and post graduate levels in which directly or indirectly contribute the instructing of the societies and provide much more influential and resultful suggestions to the relating politicians.

Agricultural higher education systems around the world are not the same from one corner to the other ones for example while among the European countries the agriculture faculties have some exchanging programs like student exchange programs inside and outside a nationwide and in the United States of America to internationalize the USA agriculture or other majors the students are financially and publicly supported to participate in short courses in China, Slovakia, Mexico, Uzbekistan, etc. Contradictorily, the same programs are not being implemented in most Asian countries like India, Afghanistan, etc. Although, many Asian countries want to approach such programs, due to some barriers especially logistic and financial obstacles they cannot implement them.

The system of agricultural higher education in the EU intensively rely on researches, and agricultural skills are being taught theoretically, empirically, class attending in colleges, or a combination of the mentioned methods targeting that students have to get adequate experiences to individually apply their earned skills in the relevant projects after graduation as a new agriculturalist and to successfully be able to proceed such field practical activities by himself/herself or as a team member.

In the USA, the system of agricultural higher education is typically based on constituting and activating of grant-college of agriculture universities/per state in which each of them focuses to provide the possibilities to perform the required researches, teaching and extension services, and to construct a multilateral-relation amongst them.

Around the Asian countries, also different agricultural higher education systems are being approached. The countries, which have a good economic situation

like China in which hires foreign academic members aiming to internationalize and improve its system and providing a betterment on English teaching to Chinese agriculture students and remarkably to benefit from newest published and reported consequences of pertinent researches also recruits the international students to rapidly reach to those objectives.

In this study, the main aim is to clarify this system around Turkey and Afghanistan that although both have about the same areas, almost similar climatic conditions, and so on common features but why in some properties such as agricultural products self-sufficiency, applying the new techniques, conducting gradually researches, etc. there are many differences. Furthermore, today's problems of Agricultural higher education system, which causes gaining of insufficient food productions and not accessing to at least an intermediate livelihood especially in Afghanistan regardless that Turkey and Afghanistan as two close friend and brother countries have announced their independence in the same year 1919 (Yılmaz, 2010), and inaugurated their official and political agencies and embassies in Kabul and Ankara, in Afghanistan this system could not be improved gradually as its improvement in Turkey. In addition, the major objectives of the study are answering to these research questions:

"What are the main reasons that agricultural education system could not be gradually improved in Afghanistan? Besides, why in Afghanistan and Turkey the willingness and consent of students are decreasing day by day instead of encouragingly the intelligent students to choose its different majors and play a constructive role in future improvement of agriculture sector of both countries? ". Therefore, finding the related responds to the above questions and dissimilarities, and suggesting many compatible resolutions express the importance of this study.

Due to applying the separate questionnaires in both countries the primary data after passing some other preliminary steps like grouping, rearranging, and coding was analyzed by applying different requisite statistical indexes especially validity and reliability to specify this research's originality, validation, and reliability. Based on the mentioned analysis, it has been distinguished that in this study more than an average originality was (more than 50%) considered.

Based on curriculum and learning materials, typically, in Turkey and Afghanistan, the agriculture higher education systems have been affected by the applicable system of the EU and USA. Specifically, the findings of this study show that there are significant differences in many aspects relevant to the ongoing agriculture education systems of Turkey and Afghanistan for instance, job opportunity in-sufficing value in Turkey was found 64.2% and in Afghanistan, its rate was calculated 30%. The consent of students from the current system in Turkey was found 80.4% while in Afghanistan was found 10.45%.

1.1. Research Problem

The research problem mainly reflects the most important subjects and unanswered questions before a researcher starts conducting his/her new research relevant to a new subject. In this study, the problems are divided into smaller and sub-problematic subjects to particularly determine it and to be able to find the likely solutions in the other steps. Therefore, the questions reflecting the main problems and almost unanswerable questions are explained: "Are agricultural higher education systems the same between Afghanistan, and Turkey? If not, why some differences are seemed in these two countries? Are the current agricultural higher education systems responsive to the increasing necessities of life-things in these countries? Negatively causing of insecurity on education system especially upon agricultural higher education is a serious problem in Afghanistan. What is the solution? In both countries, the number of agriculture faculty's applicants is decreasing day by day than other faculties, what is the reason?

Finding a reasonable solution to determine research problems, acceptable and legal answers to those questions will end the agriculture education system's negative points and provide a major contribution to sustainable agriculture across both countries. Simply approaching such academic research necessitates specifying some hypotheses that are reflecting the facts on the subject.

1.2. Hypotheses

The main concept of a hypothesis is finding a probable solution to a problem or some unanswerable questions before performing the planned research related to that

problem immediately via guessing and mental contemplations. That is to say, the hypothesis is called the preliminary answers or solutions. Relevant to the main problems determined in this research, hypotheses are;

1. Not only agricultural higher education systems of these two countries are the same but also all the other educational systems between these countries differ from each other. The basic reason for the differing education system in these countries are differing the government stability and sovereignty, in Turkey since one hundred years ago one system and regime are being conducted while in Afghanistan about more than ten different regimes and systems have been approached as of one hundred years ago till now. Thus, it causes differing of the educational system in the worst situation in Afghanistan.

2. Because of the rapid development of Turkey, as well as improving the other sectors, the education sector positively and constructively developed too, while in Afghanistan due to numerous reasons especially not having a powerful central government as too many other sectors the education sector including agriculture education has been forgotten and could not be developed.

3. It can be said, in Turkey, today's agricultural higher education system is partially responsive the increasing necessities of its citizens and a large amount of agricultural productions of Turkey is being exported to much more countries but in Afghanistan, the current agricultural higher education system is not responsinve as it is expected, especially twenty years ago except of the two or three agriculture faculties there were not any other active agriculture faculties.

4. The main solution to this problem is eradicating all terrorist groups who illegally do some un-Islamic and inhuman activities for instance; assaulting educational centers, firing of them, preventing the female class from learning, etc.

5. The main reason is the diffusion of the negative idea that "An agriculturist is a literate farmer" among citizens of these two countries. This negative idea is much more usual among Afghanistan's citizens than Turkish people are. Another reason is not finding sufficient job opportunities in the agriculture sector whether compared with medicine, engineering, and some other faculties. Therefore, these reasons cause

the young and inexperienced generation to hate being an agriculturist, working on the farms, and choosing this faculty when passing the university entrance examination.

In this study the mentioned and many other related hypotheses will be examined to finally, a solution should be found and the important recommendations be suggested. The results will be useable for policy-makers to exactly plan and accommodate new policies in the agriculture education system of both countries.

1.3. Objective and Content

The main objective of this study is to compare the agricultural higher education systems between Turkey and Afghanistan that cover many more other features relevant to this subject including the practicability system, influencing of the current system in agriculture development of both countries, assessing job opportunity situation and comparing the different levels of agriculture education like; BSc, MSc, and Ph.D.

In this study first of all some positive and negative characteristics of the agricultural higher education systems in these countries are clarified in details, then, the positive ones will be academically and by considering the penetrating conditions recommended to the second one, and the negative points also will be withdrawn from applying in the second country.

Remarking on the basic similarities and dissimilarities of the agricultural higher education systems at these two countries, it is aimed to investigate some differences and diversions of the systems, it is clear that the agricultural education system has recently developed in Turkey as of one hundred years ago but in Afghanistan, it is not like the expectations of Afghanistan's citizens.

The study aims to explain the number of the majors and active higher educational levels in both countries, in Turkey there are BSc, MSc, and Ph.D. degrees active in most of its agriculture faculties while in Afghanistan regardless of activating the MSc degree just in agriculture faculties of Kabul University, and Agricultural Sciences and Technological University[1] there are not any other post-graduates of agricultural majors. Typically, in Afghanistan, the agriculture faculties

[1] Located in Kandahar a southern province of the country

provide graduating from bachelor degree as agricultural higher education graduation, and easily the graduated ones can work in professional posts of the agriculture sector. In addition, after getting the required work experience, they can apply to the other higher posts.

This study's major contents include six chapters: the first chapter is an introduction that includes the research problem, objectives, content, and research field; the second chapter contains an overviewing of the background of agricultural higher education systems in the USA, EU, China, India, and elaborately common education and agricultural education systems of Turkey and Afghanistan; the third chapter is a literature review that explains the conceptual framework, theory, and methodology of the study; the fourth chapter contains methods and material that 385 questionnaires were conducted over students of agriculture faculties of case study universities in both countries; the fifth chapter is results and findings in which illustrates the results based on analyzing the collected primary data and comparatively clarifying of main aspects related to the subject, and the last chapter is the conclusion that concisely provides the consequences of the study. In each chapter, the related titles and sub-titles are connected through a legal and hierarchic arrangement to be much more understandable and conceptual.

2. BACKGROUND INFORMATION ABOUT AGRICULTURE EDUCATION SYSTEM IN THE WORLD

An agricultural higher education system based on education level and the country is changing. For instance, in some countries, the doctoral period is 4, 5, and 6 years while in the Check Republic both doctoral and bachelor degrees are 3 years[2] (Arslan Selçuk, Aksoy, Baboğlu, İlkten, Özkan, Katkat, Sarı, 2011). Although, in some countries of the world there are sufficient amounts of agricultural productions, in some African and Middle Asian countries sufficient nutrition and food locking is one of the most critical issues. Therefore, the agricultural higher education organizations are necessitated too much to increase agricultural productions.

Globally, agricultural universities are playing an important role in training and educating agriculturists on undergraduate and post-graduate levels, suggesting to the politicians and instructing the societies[3]. Agricultural Education-Training (AET) can be called the united interaction of these four subsystems: (1) School, (2) Faculty, (3) University, (4) Unofficial agricultural organizations (Maguire, 2000).

There are tens of universities around the world activating in educating and training of students in MSc and Ph.D. degrees of agricultural majors (Appendix 2). Agricultural higher education programs based on conditions and necessities with dynamic constructs are continuously and completely updateable. This dynamic construction sustainability has an important concept too (Yavuz, 2018). Firstly, the background of the Agricultural Higher Education System in the USA is expressed, then the EU and some Asian countries respectively.

2.1. USA Agricultural Higher Education System

Around the US, the first agriculture school is Gardiner Lyceum established in 1823 that is called the first institution to receive qualification for agricultural instruction (Stevens, 1921). Generally, around the US states land-grant colleges are called beginning of agriculture education but the Non-Land-Grant Colleges of

[2] South Bohemia Ceske BudejovicePh.D. level majors (3years) including practicable landscape ecology, economy of job management, producing of common plants, general zoology, etc.
[3] Some universities, which have agriculture faculty in their formation listed in (Appendix 1).

Agriculture (NLGCAs) and Hispanic-Serving Agriculture Colleges and Universities[4] (HSACUs) are remarkable that firstly was defined in the 2008-farm bill. As of 2019, there are more than 40 NLGCAs and 150 HSACUs certified in the US (Croft, 2019). Agriculture public institution systems called "land-grant colleges" have been provided for more people to warrant study at the baccalaureate level. Historically, subsequent federal legislation provided generating of agricultural experiment stations and extension of college establishing to extend agricultural knowledge to the populaces in each state. The extension service and land-grant colleges promoted the teaching of agriculture within colleges and throughout the states (Barick, 2013).

Land-grant institutions are located in every state and many territories of the US and form the backbone of agricultural extension and experiment stations. Land-grants colleges are a three-side mission system including agriculture teaching, research, and extension. In the early-to-mid-19th century, demand increasing for post-secondary education in agriculture and technical disciplines necessitated educating the population more broadly. To reach this target, in 1862 Representative Justin Smith Morrill introduced a bill to constitute agriculture colleges via grants of land to the states that were approved by the time President Abraham Lincoln on July 2, 1862. This first Morrill's Act marked the beginning of the US land-grant university[5] system. The land-grant college system has three categories: the 1862 institutions that are the first land-grant institutions; 1890 and 1994 institutions. Around the US there are more than a hundred (109) land-grant colleges and universities. This system operates the US Cooperative Extension Service (CES)[6] by a partnership of federal, state, and local governments (Croft, 2019).

In the US, education has developed from being a tertiary concern of the frontiersmen to nowadays headline news. Even in the 1800s, residents of the US sent their children to Europe to become educated (Barick, 2013).

[4] The word Hispanic refers to the citizens of Latin America or Spanish generations that live in the US. HSACUs benefit from competitive grants of research, education, and extension that are offered by the United States Department of Agriculture (USDA) and are not an 1862 Institution. These certified universities must demonstrate that 25% of the enrollments are Hispanic.

[5] Land-grant institutions are colleges and universities designated to receive benefits of the Morrill Acts of 1862 and 1890 that promoted establishment of institutions of higher agriculture education and mechanical arts without excluding other scientific studies.

[6] CES provides non-formal education to agriculture producers and communities via its network of offices located in most territories and counties (more than 3000 counties) of the US.

All state universities established as land-grant colleges that based on federal legislation have three functional pillars. The first is teaching, established through Morrill Acts of 1862 and 1890 and later statutes added research and extension to conduct original agricultural research and to bring its findings to the people who can put it in practice and to the non-university public by agricultural extension. Extension branches with a systematic method of involving field offices and land-grant institutions work with local agricultural producers and community members to demonstrate or put into practice all the knowledge and new techniques acquired through agricultural researches (Croft, 2019).

The duration of agriculture education in the United States of America in pre-bachelor and bachelor degrees are 2-4 years respectively. Too many universities in the USA provide the worthy BSc as well (as colleges) MSc and Ph.D. programs of agriculture education. In some majors, probably the MSc programs are with the thesis, and in the other majors non-thesis. Typically, in MSc programs with thesis, there are 22-25 credits with an average of 9 credits of thesis, a total of 30 credits are sufficient for graduation. While the MSc programs without a thesis can require up to 36 credits. If the doctorate programs remarked, a total of 90-120 credits are necessary for graduation (Arslan Selçuk, Aksoy, Baboğlu, İlkten, Özkan, Katkat, Sarı, 2011).

Agriculture faculties at land-grant institutions have academic and normal personal employments in teaching, research, extension, or combination of the three mentioned key pillars (Croft, 2019). The agricultural education of the USA is explained briefly in three periods "Past, Present, and Future":

Past: publishing the first American agricultural periodical museum started in 1810 that was an important sign of the USA's agricultural education. In the first-18 century around the US, there was a nationwide non-realization and non-understanding penetration. As Nebraska Senator Kate Sullivan has said: "There was a disconnectedly realization that people have about where their food comes from and the role of agriculture in their daily lives. More children were growing up with no connection to farming and ranching." Therefore, a little then, to inform cultivating culture into American life the agricultural journalism with about 30 farm journals permanently generated in 1840 (Chen, 2021).

Present: in the present, agricultural literacy is illustrated through the Secondary Schools Committee by saying that "An agriculturist would understand the food and

fiber systems and this would include its history and its current economic, social and environmental significance to all American inhabitants." Moreover, the young generation in the US desires to prefer the other majors and subjects than agriculture. Based upon a survey report, 72% of consumers in the US, know nothing or very little to farm. Totally, in the US less than 2% of citizens are involved directly in food-producing. The farmers' average age is augmenting to about 60 years old (58.9), and 33% of them are 65 years or older in a shocking manner that is more than the retirement average age.

Future: based on FAO's report, by 2050 the population of humans will increase to more than 9 billion (9.1), which worldly requires 70% more food production. Undoubtedly, agriculture education, farming recognition, and job participation are the necessary subjects. To reach those objectives, in the US, the Farm Bill of 2014 finances many enterprises to help the new ranchers, containing 20 million $ annually fund to elevate the farmers' education. The future of agriculture education and job participation is still the crucial subjects whilst the government is attempting to generate influential and positive changes for preventing the lack of agriculture literacy and aiming to motivate and encourage young descendant to become the future ranchers and provide the necessities of the increasingly agricultural productions (Chen, 2021).

In the US, a few institutions broke the past traditional learning methods in the early 1800s and begun teaching college-level programs, which generated "useful" professions such as Rensselaer's Institute to exert science to the common objective of life, particularly to focus on agriculture. According to the land-grant colleges' prospect, the state agricultural colleges were instituted in many states including Michigan, Maryland, Lowa, and Pennsylvania in 1855, 1856, 1858, and 1862 respectively (Huffman & Evenson, 2006).

One of the other attention attractive subject in the US is existing of competitive grant system being accommodated for agriculture and forestry researches, education, and extension such as the Agriculture and Food Research Initiative (AFRI) which is the United States Department of Agriculture (USDA's) largest competitive grants program for agricultural science researches (Croft, 2019).

2.1.1. Agriculture Schools, Colleges and Universities in the USA

Agriculture schools can offer programs at all collegial levels, from associate degrees up to doctoral degrees. While program costs are always important to be considered, students should look into additional criteria of wanted programs as well before making a decision. Here's a list of schools with agriculture programs at the undergraduate and graduate levels with estimated tuition costs (Table 2.1).

Table 2.1. Some colleges with their active degrees in the USA

University	Location	Institution Type	Level	Tuition costs (2015-16)$
California	Davis	4-year, Public	BSc MSc Ph.D.	13,951 In-state, 38,659 Out-of-state
Cornell	New York	4-year, Private	BSc MSc Ph.D.	49,116
Massachusetts	Massachusetts	4-year, Public	BSc MSc Ph.D.	14,171 In-state, 30,504 Out-of-state
Florida	Florida	4-year, Public	BSc MSc Ph.D.	6,381 In-state, 28,659 Out-of-state

Sources: NCES College Navigator

2.1.1.1. College Selection Criteria in the US

Some important subjects necessitate to be considered while looking at agriculture schools are: (1) Students should seek out schools with plenty of specializations that may include agronomy, horticulture, agri-science technology, agribusiness economics, and animal science like equine science and veterinary technology, etc. (2) Programs should offer a type of classes including animal/plant science, agricultural computer software, animal anatomy, agriculture safety, public policy, and research. (3) Look for a school with agriculture-based student organizations, clubs, or leadership opportunities. (4) Quality schools feature state of art facilities with a computer lab, animal health facility, and a farm center.

In the twentieth century, the USA Agriculture was an important example of successful agricultural developments. Because it displayed a considerable

transformation, a dramatic change, and a high rate in growth productivity. In the development of agriculture both the biological and technological improvements are positively effective, but like other countries of the world experiencing some revolutions, wars and so many instabilities have negatively affected the gradual improvements of the US too. Fortunately, the postwar period involved a dramatic technology revolution in chemical and mechanical innovations that have created today's results (Antle, 1983).

2.2. Agricultural Higher Education Systems in the EU countries

Agricultural education systems vary widely throughout the European countries and initial training is a national competence. Around the EU, however, the population who engage in the farm is aging, and generational renewal has become a critical theme, they perform a lively role to provide an assured and financially manageable food to almost 500 million Europeans.

The attraction of new descendants of farmers with the required professions to cultivate in a demanding context is the need of the farming sector. Producing more efficiently with protecting the environment, to combat against climate changes, keeping up with increasingly rapid technological and scientific progress, and meeting the society's continuous demands regarding healthy and balanced diets is so essential that farmers should benefit from adequate agricultural education and training, also acquire various skills needed to be adapted to a changing environment.

Intermediately, only 8.5% of the European farmers have received full agricultural training, and 70% have only practical experience. The current common agricultural policy places a strong emphasis on knowledge sharing and innovation. The required financial supports are provided for innovation through European Innovation Partnership (EIP) for agricultural productivity and sustainability (Granier, 2017).

In the European Union (EU) countries, agricultural education has come out through different methods in the beginning. For example, if it is wanted to give example related to MSc education in the EU countries, in Germany after finishing bachelor degree, if a student hopes to continue MSc degree can do it and the lessons

which he/she will be able to choose are evaluated as the continuation of a bachelor degree. BSc education system as period can be named 7-8 semesters. The students can choose their majors in the MSc and Ph.D. degrees themselves (Arslan Selçuk, Aksoy, Baboğlu, İlkten, Özkan, Katkat, Sarı, 2011). A master of science (MSc) in the EU is usually a two-year program that compels students to extremely focus on the specific subjects. In addition to classroom learning the students can engage in fieldwork, laboratory experiments, or original research projects. Some MSc degrees necessitate a master's thesis before the degree is granted (*MSc Degrees in Agricultural Science in Europe*, 2021).

Among EU countries, Italians are considering and remarking better-organized diplomas till now that is looked heterogenic education system in agriculture education integration. Likewise in the EU the agriculture education in the organizational direction of integration and adaptation content, the registration system of higher-education, the contents and constructions of the lesson, the lesson offering methods and effectiveness, continuity based on the lessons, the most effective approach of approving the theoretical and practical parts of education, the form and quality of exams with degree making a contribution of so many other features necessity attracts attention (Anonymous, 1994; Cinemre, Hüseyin Avni and Demiryürek, 2010; Naim, 2019). In European countries, many MSc courses offer a combination of research and a classroom-based curriculum (*MSc Degrees in Agricultural Science in Europe*, 2021).

During the last half of the 18th and all of the 19th centuries, Europe especially in the United Kingdom[7]development of animal breeding was a forerunner of livestock breeding and animal improvement. In Europe, before the 17 century, land-holdings were under the control of a feudal system and livestock mingled together like they grazed the "common pastures" Thus, people should to traditionally nurture animals more than planting. In the mid-19th in the EU, new institutions established in Scotland, England, and Germany were constructed upon the emerging of the scientific field in agricultural chemistry. The early agricultural scientific leader Justus von Liebig, a German resident that his contribution came via his research in

[7] UK left it's a 47-years membership from the EU on 31 January 2020.

chemistry, his intellectual stimulation and training of other agricultural chemists, and his book “Organic Chemistry and its Relation with Agriculture and Physiology” published in 1840 that will not be forgotten (Huffman & Evenson, 2006).

As a consequence, in the EU the students can be encouraged to take part in national and international exchanges to widening of their horizons and professional skills. In the Member States, agricultural education is an integral part of general education and initial agricultural training remains a "national competence" and is provided within national education systems. Today EU common agricultural policies bring a strong emphasis on innovation and knowledge sharing.

2.2.1. Agricultural Training Levels in the EU

Around all the member states of the EU, besides common education and training the agricultural education is also an integral part, which typically divides into three levels: (1) practical agricultural experimentation, which paves the ways of getting experience via practical working on the farms. (2) basic agricultural training in which contains general agriculture college or an institution in different majors such as horticulture, agricultural technology, veterinary, etc. and (3) full agricultural training that by ending the compulsory education provides courses equivalent of at least 2-years full-time training, in diverse majors (Granier, 2017).

Offering education is not only the aim of agriculture faculties in the EU but also the other absorbing sectors including food security, human nutrition, waste, and natural resources management, breeding peculiar animals, landscape planning, etc. are targeted to be implemented (*Study Agriculture Degrees in Europe – Educations.*, 2021).

In addition, conducting a certain number of seminars on various subjects at national and international levels is being required around the EU, and students can apply to attend seminars whatever they interest to improve their knowledge and practice a foreign language they have learned earlier (Fischler, 1999). In the EU countries, young farmers interest to approach their agriculture career after getting the pertaining diploma required in their countries' agricultural education system. The agricultural education system has different levels based on various national education

systems (as in Germany) it includes initial vocational training, studentship, undergraduate and postgraduate higher education systems (Granier, 2017).

European agriculture colleges facilitate the taking of agriculture knowledge to all people who wish to have a career in a land-based sector. Generally, in European agricultural colleges, students learn via a combination of practice and theory offered within the campus of colleges or industrial placement. The task of farming colleges in the EU countries is to not only graduate qualified students but also aims to broaden their knowledge and provide acquiring new skills. European agricultural colleges work in a partnership with some relevant parts and institutions for instance research institutions, employers, regional and governmental authorities, schools, and universities at local, regional, national, and international levels (Fischler, 1999).

2.3. Agricultural Higher Education Systems in Asian Countries

In Asian countries generally, there are three levels of the agricultural education system. The related fields of study are fisheries, food technology, forestry, veterinary medicine, and other majors that are associated with agriculture or closely related to it. In detail, each level is explained under the following sub-titles.

2.3.1. Levels of Agricultural Education in Asian Countries

1. Third or higher level of agriculture education that includes the following institutions: (a) Faculties or colleges of agriculture in universities offering undergraduate or post-graduate courses. (b) Agricultural institutions of an independent character at university level offering undergraduate or post-graduate courses. (c) Colleges or junior colleges of agriculture, including agricultural teacher training institutions, and (d) High technical schools and polytechnic institutes offering instruction in technical agriculture for two or more years after finishing high school.

2. The second or intermediate level covers the following types of schools: (a) Vocational agricultural schools. (b) Comprehensive high schools with agriculture courses in the vocational stream. (c) General high schools offering agriculture as an

option or elective, and (d) Technical schools of agriculture one year after high school.

3. Primary or first level agricultural education that contains: (a) Primary schools offering agriculture as either a subject or part of a subject. (b) Farm schools. (c) Farmers' training centers, and (d) Practical schools having no fixed level of entry, which offer practical training in agriculture for periods varying from one week to several months (Paris, 1971).

2.3.2. Administration of Agricultural Education in Asian Countries

For the reason of differing systems of the national administration in Asian countries as a consequence of varying colonial history the organizational structure and hence the administration of academic agricultural education in both public and private sectors differs somewhat from country to country, however, the overall objective of increased productivity is the same. Constitutional mandates, legislation or special laws, ministerial decrees or department orders, and presidential and executive orders motivate the promotion and development of agricultural education in different countries of Asia.

There are many entities involved in the operation, administration, and supervision of agricultural education, but the government bodies are mostly concerned with the national ministries of agriculture and education or other relevant technical ministries. These national agencies have local bodies or branches in different states of the country or provinces that are entrusted with the implementation of agricultural education programs at this level.

In most Asian countries, formal agricultural education at all levels directly comes under the supervision and monitoring of the education ministries or their relevant departments (Table 2.2).

Table 2.2. Administration of agriculture education in different countries of Asia

Country	Third level	Second level	Primary and post-primary levels
Afghanistan	AE	ME	MA, HA
Burma	ME	ME	MA
Cambodia	MA	ME	MA
Ceylon	ME	ME	MA
Taiwan	ME	ME	MA
Indonesia	AE	MA	MA
Iran	AE	MA, ME	MA
Japan	ME	ME	MA
Korea	ME	ME	MA
Laos	-	MNE	MNE
Malaysia	AE	MA, ME	MA
Mongolia	ME	MA	MA
Nepal	MA	ME	MA
Pakistan	AE	MA	MA
Philippines	AE	ME	MA, APC
Singapore	-	MND	MND
Thailand	PM	ME	MA
Viet-Nam	ME	ME	MA

Source: (UNESCO, 1971)

2.3.3. Agricultural education system in China

Agriculture education in the country is remarked as a major sector in the entire economic development strategy, high institutions with agriculture education serve to produce qualified human resources for agricultural and rural development. High agricultural institutes play an important role in the country's rural development due to existing of poverty in the extensive areas that have a high demand for educated agriculturalist personals. Learning English as a foreign and most important language that most of the researches findings are available in that, main courses might be advanced in English, senior English writing, English-Chinese translation, international trade practice (English version), etc. are being conducted in most agriculture colleges of China (Yuan, Y and Cheng, 2008).

Recently, the agricultural higher institutions in China have progressed through employing outstanding and well-known teachers that can conduct its agricultural higher education system at national and international levels. To further strengthen its worldwide contribution in agricultural education, the Ministry of Education of China

has encouraged universities to recruit students that are more international and most universities have permanent foreign professors from the USA, UK, Australia, etc.

Moreover, in China's agricultural universities there is a powerful mutual academic relationship between Chinese agricultural institutes and foreign agriculture colleges in the USA, Canada, UK, France, Italy, and South Korea, etc. This cooperation is in various forms including academic exchanges and conducting common academic researches.

Getting agricultural degrees in China commonly takes about 4 years for a bachelor's degree, 2-3 years for MSc, and 3-4 years for Ph.D. degrees. Most universities have two breaks in the academic year, one in September and another in March; students can start at any of those two intakes. Besides lessons, students can take internships in agriculture companies, factories, or farms to learn better what they are taught theoretically in the classroom (*Agriculture Education and Degree in China*, 2021).

2.3.4. Agricultural education system in India

Although thousands of years ago (medieval) agriculture has developed around the country, there was not any formal system of agricultural education until 1877. The first agriculture college was established at Saitapet that later shifted to Coimbatore. In the first years of starting formal agriculture education, it was as a part of engineering faculties. After its independence in 1947, the government of India as a major issue identified and recommended establishing agricultural education in Rural Universities. The concepts of those universities were very similar to Land-Grant Colleges of the USA. Subsequently, two joint Indian-American Teams of Agricultural Research Education (1954-55 and 1959-60) endorsed and suggested establishing Agricultural Universities in various states of India on the pattern of LGCUs of the USA (*Agriculture Education in India*, 2017; Varma, 2014), the first State Agricultural University (SAU) in India as a LGCU was established in 1960 in Pantnagar (*Agriculture Education in India*, 2017) which has paved the way for other states agricultural colleges establishment.

In the case of academic programs, most of the universities conduct their curriculum agenda without involving any other second and outside agencies in

handling the related programs and courses. Some efforts had been done in having exchange programs with universities from abroad but the costs involved and logistical issues have prevented such efforts (Tamboli & Nene, 2013).

Starting of modernization in agricultural higher education was in 1958 by covering the MSc and Ph.D. degrees in the formation of postgraduate education leading, aiming to integrate teaching, research, and extension, promoting operational and organizational autonomy, etc. (Varma, 2014).

Like other countries of the world, most of the Indian agriculture students (52%) were from rural backgrounds and those whose families have been engaging in the agriculture sector and 36% were girls as of 2017 (*Agriculture Education in India*, 2017).

There are a large number of agricultural universities/colleges in the country. More than 45 SAUs, 1 Central Agricultural University, and 5 deemed university. Regardless of existing much more agricultural colleges some constraints and limitations like difficulty in attracting talented students, funding crunch, the larger number of vacancies, weakness in teaching and learning process, etc. Negatively causes them still. Essentially, the lack of autonomy of Vice-chancellors is too important administrative subject. They do not have academic freedom. Their autonomy is only on paper not in the real sense. They are not consulted about their faculties' required annual budgets; need the government's permission in appointing and promoting faculty. Moreover, there are remarkable political interferences in daily activities (Tamboli & Nene, 2013).

In India, for sustaining, diversifying, and realizing agriculture potential it is required to improve skillful human resources in agricultural universities. Agricultural universities and colleges offer the different disciplines of agriculture namely, agricultural engineering, horticulture, veterinary and animal husbandry, dairy science, food technology, fishery science, etc. (*Agriculture Education in India*, 2017).

The agricultural education system in India is designed to meet the work force necessities of the government. Therefore, the motivation of self-employments is hardly around the country, generally, every agriculture graduate expects to be employed in government formation not generally in private or other sectors while

veterinary graduations employment ratio in the private sector and free-activities are more than its governmental employment numbers (Tamboli & Nene, 2013).

As a brief comparison among agricultural higher education systems of the USA, EU, and many Asian countries like China and India it has been specified that among the mentioned continents and countries the USA is the only continent, which has almost similar agricultural higher education systems around its states. Mostly agricultural higher education system around the USA is based on LGCUs that necessitate integration and being, close and active multilateral relations of teaching, research, and extension as three pillars of agriculture development. Relevant to the periods of BSc, MSc and Ph.D. generally in most countries those programs continue 4, 2, and 4 years while in Germany Ph.D. degree requires less than 4 years. In the EU members, there are powerful and active interdisciplinary and multilateral relations among universities like the program of sending students from one university to another within country or abroad, but such programs implementations are impossible in many Asian countries especially those, which do not have a good economic situation. For instance, in India when the universities decided to have student exchanging programs unfortunately due to logistical issues they could not take place their decision. A notable point in China's Agricultural Universities is employing and recruiting of international professors and students to highly internationalize their agricultural institutions, especially they attract professors from the USA, UK, Australia, etc. also in China to actively and extensively accessibility to new knowledge and researches findings, the ministry of education of China has entered the English language in the curriculum of agriculture colleges and many other related faculties.

2.4. Education System in Turkey

Getting a 12-years compulsory education as of 2012, which is divided into (4 years elementary, 4 years primary, and 4 years secondary education) schooling around the country is free of any expenditure to every resident. The official language to take education is Turkish excepting the licensed and foreign institutions.

Administrative running of the educational sector relates to the Ministry of National Education *"Milli Eğitim Bakanlığı (MEB)"*. In addition; curricula

designing, and developing; relevant public, private, and volunteer officials organizations' activities coordination; educational infrastructure and building construction, etc. are the responsibilities of MEB around the country (MEB, 2021).

The designed and developed curriculum and prepared regulation by the MEB are discussed again by the Supreme Council of National Education (SCNE) and decisions are taken based upon the results of their discussions. Per province, there are the National Education Directorships of the MEB that handle the educational affairs according to the direction of the local (provincial) governor.

The educational expenditures are provided by the central government, which about 10% of the national budget is allocated. Commonly, the academic calendar starts and ends from mid of September to mid of June with a bit variations between rural and urban areas in accordance with the weather changes. In the academic calendar, there is a 2-week winter breathing between January and February. Schools term time per week is from Monday to Friday with 35-40 hours.

The universities typically organize the academic year into 2 semesters from October to January and February/March to June/July (MEB, 2021).

2.4.1. Turkish Formal Educational Systems

Around the country, this type of education is the methodical education of citizens in the definite age groups and has been being offered in schools and universities. This educational system includes the following levels and types of schools.

2.4.1.1. Formal Education Levels in Turkey

1. Pre-primary education
2. Primary education
3. Secondary Education
4. Higher Education

Pre-primary education: this is an optional formal education for children under the age of compulsory primary education (3-5) years. It proceeds in nursery classes of primary schools and private nurseries, daycare homes, and kindergartens under the supervising of the MEB. In the comparing with small cities this level of education is

more usual and concentrated in the larger towns and cities of the country (MEB, 2021).

Primary education: it is the first compulsory education step for all boys and girls at the age of 5.5 years old. Totally contains 8 years of schooling (elementary +primary). Furthermore, around the country, there are private schools activating under state control. Foreign language starts from the fourth class in most of the primary schools. Generally, to avoid social class differences among students, the same uniform is conducted. The unsuccessful students must retake the same class next year. After finishing the 8-years primary education, the successful students start secondary education (MEB, 2021).

Secondary education or high schools *"Lycees, Lise"*: including general (academic) schools, science (technical) schools, and vocational schools that are compulsory for a further 4-years. The young generations take this step from age 14 onwards. The first two of these high schools culminate with the National University Entrance Examination, and the latter produces the job-ready employees (*Education System in Turkey*, n.d.). The purpose of secondary education around the country is to educate students to learn this country's culture, to identify the social problems and preparing them to search for relevant solutions, to raise their awareness in socio-economic contribution, and more importantly preparing the students for higher education, etc.

Higher education: by finishing the secondary education, the students enter the Student Selection Examination *"Öğrenci Seçme Sınavı) (ÖSS*)", which is accommodated in two types including the Undergraduate Placement Exam *"Lisans Yerleştirme Sınavı (LYS)"* and Higher Education Entrance Exam *"Yükseköğretime Geçiş Sınavı (YGS)"*.

The annual administration of these nationwide exams is being approached by the Student Selection and Placement Center *"Ölçme Seçme Yerleştirme Merkezi (ÖSYM)"* which after evaluating the students' high school results and based upon their preferences, and the capacity of the related faculties, students registration are taken place in the universities.

The talented student having the required grades for a bachelor degree are qualified and after finishing they achieve a Bachelor's Degree (BA) but those not

having the requisite number are able to receive a 2-years higher education called pre-bachelor and by ending they are given an Associate's Degree (AA) (MEB, 2021).

Usually, the bachelor's degree takes 4-years except for the Dentistry and Veterinary Faculties that last for 5-years and Medicine for 6-years. Continuing the MSc degree depends on the students' desire and requires 2-years with a thesis or non-thesis. The Ph.D. programs necessitate having an MSc degree certificate and require at least 4-years with a thesis. The graduates of the Dentistry, Veterinary, and Medicine Faculties are exceptional and because of necessitating more than 4-years in the undergraduate period they directly apply for Ph.D.

Around the country, the targets of higher education are raising the students' skill and professions, to conduct scientific researches, to facilitate the advancements of science and technology, to conduct and finalize the demanded projects of the government to make comment, to enlighten the society, and to be prepared for offering the non-formal education nationally.

The major income resource of universities is provided via yearly national budget, which is equal to approximately 60% of their total income. Nevertheless, the universities can generate their income by the services they provide like patient care within the universities' hospitals, contributions of private students, some projects, etc. (MEB, 2021).

2.4.1.2. Formal Schools in Turkey

There are three kinds of formal education around the country: General and Vocational High Schools with Higher Education Institutions.

General high schools: aim to prepare the students for higher education. Some of them have foreign preparatory classes with double language including Italian, German, Austrian, French, etc. Moreover, there are many evening high schools activating at the buildings of day schools that are designated in order to permit progressing the formal education of those students who work after primary or middle school.

Vocational and technical high schools: target providing the professionalized guidance to train the qualified and skillful persons in the country. It is divided into (a) Technical high school containing electricity, chemistry, electronic, machinery,

building, etc. and (b) Vocational high schools including industrial high schools, girls' vocational high schools, public, commercial, agricultural, meteorology, and animal husbandry vocational high schools, etc.

Higher education institutions: Turkish Universities follow Ataturk's principles and are called Republican institutions including the universities, faculties, institutes, conservatories; police, military colleges, and academia; research centers, etc.

The Council of Higher Education *"Yüksek Öğretim Kurumu (YÖK)"* supervises the universities and their programs must be accredited regularly. This is a wholly independent national board of trustees regardless of any governmental or political affiliations. The first and official language of teaching in the universities is Turkish. Nevertheless, many universities use English, Arabic, French, and German as the instructing language after approaching a 1-year preparatory language learning classes.

2.4.1.3. Turkish Informal Education Systems

Around the country, there is a network of training centers that undertake this kind of national education, which are activating under the supervision of MEB. This system addresses prolonging the education of those students who could not complete their requisite education in the formal system, teaching balanced nutrition, contributing to a healthy lifestyle, teaching different skills for people to improve themselves, etc. (MEB, 2021).

2.4.1.4. Agriculture education background in Turkey

In the view of agricultural products, Turkey is one of the unique self-sufficient countries. Lately, although the industry has been developing in this country, the agriculture sector has the main role in its economy. In 1985, the active agriculture worker percentage was 59% while in Greece 50%, Spanish 35%, Italy 24%, French 17%, USA 5% and in England was 3%.

The Gross National Product[8] (GNP) of the country since 1984 has been gained 20% from agriculture, 22 % from industry, and the remainder from other sectors (Tosun, 1986). In Turkey, one of five persons is employed in the agriculture sector (Naim, 2019). Turkey with a 785,347 km^2 area is 35th among 195 countries of the world. Based upon the agricultural land area, Turkey is the 50th country in the world that has 24.1 million hectares of agricultural land, 14.6 million hectares of pasture-grasslands, and 18.5 million hectares of forest and arable land. 5.2 million hectares of useable agricultural lands are being irrigated, and unfortunately, one million acres of first-class agricultural lands are rapidly being used in the other objects.

The country's agricultural production potential is high. Based on the conducted accountings, Turkey is in the condition of producing at least a reduplicate of today's product. With this nature, it is dependent on agriculture development. In Turkey, boosting of agricultural products has to be in a vertical direction not horizontal. Because, after this time the spreadable lands of agriculture are on its ending to the last limitation. Equivalent to this development in agriculture, it is possible per unit field yields enhancing in the vertical direction development. This is just possible through modern cultivating and implementation of technologies in agriculture.

As many people taught, agriculture is not only soil plowing, seed cultivating, and yield harvesting but also is an occupation that includes all of the basic science branches into practice. Without knowing the soil chemical structure it is impossible to specify, which kind and how much fertilizer should be used. Without knowing the physical structure of soil, it is impossible to accommodate the advantageous irrigation times. Increasing agricultural products is impossible without amending the high efficient plant variety and animal race. Without knowing animal and plant physiology and ecology, knowing their scientific growing, and feeding, without knowing the basic principles of biochemistry and microbiology it is impossible to operate and evaluate the agricultural products. Therefore, agricultural yields and indirectly increasing of products is only possible by using technologies

[8] GNP and GDP are two of the most commonly used measures of economy in a country. Both measure total market value of goods and services produced over a defined time typically per year. GNP indicates a country's citizens' income inside and outside the country's border but GDP only indicates domestic or inside the country's income amount of its inhabitants.

manufacturing and educating of producers to learn this technology's using (Tosun, 1986).

In Turkey, the importance of agricultural education firstly was realized in 1845. In Istanbul (Ayamama Farming) February 10, 1846, the first "Agriculture High School" was established so the first agriculture education started in Turkey at a high level at that time. In that school, the educated lessons had two attractable points: the first was informing about bridge and way beside agriculture. Exactly, the cornerstone of villages' agriculture technique, importance in making the way, bridge and spring infrastructures, and today's Way, Water and Electric (WWE) was put on that time. The second particular was value giving to practices and accommodations in that school, which had been established inside the farms. This was one of the too important subjects. Because in today's situation the most criticized subjects of agriculture engineers are inadequate accommodations occurrence and preferring of sitting on desks more than going to the villages and agricultural lands. The first reason for this situation is extremely entering much more students and locking of practical facilities during personals education; the second reason is not providing the possibilities to them to facilitate the staffs' going to the villages and agricultural lands.

For a long time, no works have been done relevant to agricultural education, and approximately after 40-45 years by recommending "Suphi Pasha" these two schools "The operations agriculture school" were established in "Selanik" and Bursa in the years 1887 and 1891 respectively. In addition, the "Halkali Agriculture High School" was established in Istanbul in the year 1892. In Halkali Agriculture High School, the lessons were arranged before-noon and in the afternoon, all of the students were engaged in practical works. In this school, the lessons and practices were actually in a good situation. Only doing research was insufficient. That school was not equipped in a manner to accomplish the required research.

In the Republic Period, as a requirement in every sector, reform was required in agriculture education. Because in the alignment's period generating of some bases to develop the county's agriculture, not the training of personals to accommodate these bases, these problems have been transmitted to Republic Period too. For

reaching to this objective and to plan to develop agriculture education at a high level in 1927 one board was invited from Germany. Based on that board's given report (05.07.1927) and 1109 numbered regulation related to "Agriculture and Veterinary Institutes with High Schools Foundation and Reforming of Agriculture Lessons" a new law was ratified. According to this legislation, in Istanbul by the closing of the Halkali Agriculture High School, in 1930 its lecturers were placed in Agriculture School, which was located in Ankara *"Keçiören"* way. Subsequently, in 1933 these lecturers were transmitted to the "High Agriculture Institute" that was founded in Ankara. High Agriculture Institute (HAI) is the first agricultural foundation in Turkey that was established in the meaning of the university (Tosun, 1986).

High Agriculture Institute was dependent on Agriculture Ministry and the ministry assigned its Rector. In 1946 through approving, a law after the universities became independent, in HAI the idea of entering to a university construction generated too. In 1948 by a newly approved law thorough nullifying of HAI, the Forest Faculty had been dependent on Istanbul University, Agriculture and Veterinary Faculties were depended to Ankara University and Basic Sciences Faculty with all of their lecturers, and laboratories were combined to Science Faculty of Ankara University. In the alignment period in Istanbul and Republic period in Ankara from one center, the manageable agricultural education training since the 1955 year in different zones of the country established faculties' continuance has been started and it is continuing.

For this objective, the number of agriculture faculties around the country increased to 11 agriculture faculties by establishing this faculty in Izmir in 1955 dependent to Ege University, in Erzurum 1957 dependent to Ataturk University, and Adana in 1970 dependent to Chokurova University one by one. Afterward by a regulation of High Education Foundation (HEF) in Samsun, Bursa, Tekirdagh, Konya, Tokat, Van, and in Antalya this faculty has been established respectively.

In the 55 years development plan, the direction of technology transferring to transfer the extension services to farmers up to nearly village levels the organized performances was predicted (Tosun, 1986).

Therefore, by remarking the difficulties of practicing that sum of students in every major should not be more than 20-30 persons and applying the condition of not being close to each other the new faculties establishing in different geographical zones were considered beneficial. Because the objective of agriculture faculties is not only students training. In modern concept, the established faculties have three main functions: education, research, and extension, and in agriculture faculties, these three main functions are important in equal ratio. The agricultural production process dissimilarly to other science branches is an activity that tightly depends on ecological conditions. For instance, in the medical branch using an operation method, in engineering, the technic of constructing a bridge is applicable in every place. Unlike, in agriculture using a particular method in a specific zone or area could not be applied in the other zones in which their ecological conditions are dissimilar. So, applying a technic in every zone for increasing the agricultural product requires research related to that zone's conditions.

In different geographical zones, the established agriculture faculties on one side are providing the facilities that students can be trained and educated; on the other hand, they are providing too important services to the agriculture sector of the relevant zones. As an example of these activities, the services that the agriculture faculty of Ondokuz Mayis University has provided in the Black Sea zone require to be remarked. In one geographical zone clarifying that, how the established activities play role in solving agriculture problems is necessary (Tosun, 1986).

In Turkey agricultural education was started in 1846. A little then, in 1848 Halkali, in 1930 agriculture high school, in 1933 thorough establishing of the agriculture high institute by the name of university started providing the first agriculture education that was converted to agriculture faculty in 1948. There had been conducted different studies and congresses relevant to agricultural education training. The first agriculture congress was held in 1931. In both, particular and common contents; "Establishing of the farmers' children schools and teaching the agriculture techniques to them " was aimed in the congress.

The agriculture sector depends on existing of other attractive sectors to force the agriculture production and increasing of its productivity to be able in developing

the agriculture sector, play the pushing and nutritious role in economic development, and to contribute development. The economy depends on both, productive movements existence and nutritious power of agriculture and industry sector especially developing of absorbing branches of industry and its leading to reach the majority period via common moving. Certainly, by the preparer-nutritious role of agriculture and playing a progressive role of industry among these sectors, sustaining of communication in a healthy, stable and continuity is possible. Its realization necessitates sub-construction of economy and market mechanism in an indispensable measurement to be efficient (Direk, 2012).

2.4.1.5. Agricultural Higher Education System in Turkey

In Turkey, institutions of agricultural education can be divided into two categories: (1) agriculture technicians' education training and (2) high-schools and faculties that offer high education training. Besides the high rate of decreasing in the 1930s for providing a modernization system in agriculture with the opened agriculture profession high schools, too many technicians have been trained and offered to serve the agriculture sector of the country. But on the contrary, the developing and changing conditions made this education-training to develop not rapidly as was expected (Direk, 2012).

The establishment of "Agricultural Higher Institutes" were thought to be established similar to the EU universities' structure which in these universities, the general approach is covering all the majors of agriculture under the same framework and by utilizing of education integration structure, using the resulted possibilities are more rational.

After establishing the first agriculture faculty in Ankara, Izmir, Erzurum, Adana, and Samsun in the years 1948, 1955, 1958, 1967, and 1976 respectively (Naim, 2019). Especially, in Turkey after the 1980s the establishment of agriculture faculties has been rapidly increased. As continuing of agriculture faculties' establishment in the world, its establishing around Turkey is continuing too (Arslan Selçuk, Aksoy, Baboğlu, İlkten, Özkan, Katkat, Sarı, 2011). In Turkey, 43 universities have agriculture faculty in their formation under different names. In these universities, *"Muğla Sıtkı Koçman, Kocaeli"* and *"Bandırma Seventeen*

Eylül", Sivas Science and Technology University constitutions' programs have not begun educations still. In 2020, by the first student accepting of Agriculture Faculty of Sakarya Practical Sciences University and other 37 universities (Table 2.3) nowadays totally 174 programs have been opened in 38 agriculture faculties (TMMOB, 2020).

Table 2.3. Turkey's Universities that have agriculture faculty with their contribution

No	University	Share from (2019 - 2020)	
		2019	2020
1	Adiyaman	31	31
2	Akdeniz (Antalya)	299	344
3	Akara.	380	401
4	Atatürk (Erzurum)	192	201
5	Aydin Adnan Menderes	247	247
6	Bileçik Şeyh Edebelli	41	41
7	Bingöl	31	31
8	Bolu Albant İzzet Baysal	120	120
9	Bursa Uludağ	236	246
10	Çnakkale Osnekiz Mart	263	299
11	Çukurova (Adana)	301	306
12	Dicle (Diyarbakir)	114	186
13	Düzce	26	52
14	Ege (İzmir)	330	340
15	Erciyes (Kayseri)	140	161
16	Eskişehir Osmangazi	155	155
17	Harran (Şanliurfa)	154	175
18	Hatay Mustafa Kemal	119	119
19	Iğdir	31	31
20	İsparta	153	165
21	K.Maraş Sütçü İmam	140	140
22	Kirşehir Ahi Evran	109	145
23	Kilis 7 Aralik	21	21
24	Malatya Turgut Özel	82	103
25	Niğde Ömer Halisdemir	78	78
26	Ondokuz Mayız (Samsun)	238	238
27	Ordu	52	52
28	R. Tayyip Erdoğan (Rize)	32	32
29	Sakarya	-	31
30	Selçuk (Konya)	278	278
31	Siirt	109	109
32	Şirnak	42	42
33	Tekirdağ Namik Kemal	171	192
34	Tokat Gaziosmanpaşa	120	120
35	Uşak	104	114
36	Van Yüzüncü	100	110
37	Yozgan Bozok	68	68
38	N. Erbakan	26	31

Source; *(ÖSYM, 2020)*

Until 1990, the agriculture faculties which were providing major educations have been changed to education programs and started giving the education-training programs of animal production, plant production, agriculture technologies, food engineering, and landscape architecture. Nevertheless, without graduating in this term through gathering the animal products, agriculture technologies, and plant products, the agriculture-engineering program has been engendered. Since 2003, agriculture engineering, food engineering, and landscape architecture under the three programs of education training have been continued.

As it is seen, relevant to high education, the agricultural activities are being offered in many high profession schools and faculties. The agricultural education-training activities are being held down in agriculture, veterinary and watery products faculties. Inappropriate employment policy, which has been for many years, agriculture engineers and veterinarians relying upon desks, while they are responsible for performings in the agricultural fields via mistake evaluation, etc., have been causing the inflations in this area. Whereas, agriculture engineering in rural necessitates working in rural areas. Nevertheless, in today's conditions' evaluations, the agriculturists are not doing agricultural activities and their employment in the cities is regrettably being seen.

Due to having sea and internal water resources Turkey is a quite lucky country that has the important potential of watery yields. Around the country, positive developments of watery productions have recently been recorded as its developments globally (Direk, 2012).

2.5. Formal Education System in Afghanistan

Based on the 40th material of Afghanistan's constitution taking education is the right of All Afghans and is free of any charges provided by the government up to bachelor degree in the governmental educational institutions (Justice, 2019). Around the country, because of approximately a 40-years war and internal conflicts, as the other sectors education also could not be developed and remained in an unstable and changeable situation.

As of falling the regime of Taliban, noteworthy attempts have been conducted in the education sector around the country that according to the official reports there are more than 9 million enrolled students in the schools right now. Especially, in the Taliban regime, the girls' education that was about wholly prevented. Fortunately, after 2001 was started again, and nowadays 39% of students are formed from females in the country. According to the Ministry of Education report in 2015, the annual numbers of secondary graduates have risen from about 10,000 in 2001 to more than 266,000 in 2013.

The higher education registration also increased dramatically. As the reports of the US Agency for International Development (AID), and the Central Statistics Organization of Afghanistan (CSOA) regardless of private only the governmental universities' enrolments increased from 7800 in 2001 to 174425 undergraduate in 2015 (Otterlo, 2008).

The Afghan students especially who finish the bachelor degree mostly want to take their graduate levels of education (MSc and Ph.D.) in many foreign countries in which provide scholarship for them or economically they take privately. There is not a definite statistical resource to determine the exact number of Afghanistan's outbound students, for instance, based on the estimation of World Bank in 2013, the number of outbound Afghan students was 5000, and based upon the 2016 report of UNESCO, approximately 17000 Afghan students were specified in 2013, which 53% of them were in Iran, 14% in India, 8% in Turkey, 7% in Saudi Arabia, and 3% in the US.

Around the country education system contains the primary, lower secondary, and secondary or high school *"لیسه"* , vocational, teacher training colleges, and religious educations. According to the law approved in 2008, there is a 9-years compulsory education (primary and pre-secondary). The learning materials are commonly distributed to all provinces after annually printing and renewing.

Figure 2.1. Preparing of learning materials to be transferred overall the country

However, in agriculture schools, teaching the traditional textbooks cause theoretically offering of the practical lessons, the new teaching methods have been being introduced lately (Figure 2.1) to take place the new methods, firstly a team formed from Dutch and Afghan in Curriculum Development Unit (CDU) has evolved the new teaching materials for both Agriculture High Schools (AHS) and National Agriculture Education Colleges (NAEC) in the country (Otterlo, 2008).

2.5.1. Primary Education System in Afghanistan

This level of education contains the first to the sixth classes that are divided into two cycles. The first cycle includes grades 1-3 and the pertaining curricula are nationally consistent that includes subjects like religious education, first language (Persian or Pashtu affiliating on the zone and regions), mathematics, etc. The second period contains the 4-6 classes and besides the first cycle curricula, many other subjects such as natural sciences, history, secondary language (Pashtu/Persian), etc. are taught. student commonly start their primary education between the age of (6-8).

After ending the primary level, students must pass an entrance exam to be admitted to the lower secondary education *"مکتب متوسطه"*. At this level, the students can choose to prolong more general or religious education (Reviews, 2016).

2.5.2. Secondary Education System in Afghanistan

This level contains two 3-years periods. The first period is called lower secondary education covers the (7-9) classes, and the second one is higher secondary that includes the (10-12) classes.

The students who want to continue their higher secondary education must successfully pass the ninth class ending examination. When finishing the 9th grade they can select technical and secondary vocational education. The technical programs' duration varies from (2-5) years based upon the field of specialty and students' entry-level.

Curricula designing, policy evolvement, funding, and so on administrative affairs are the responsibility of the Education Ministry (EM) (Reviews, 2016).

2.5.3. Higher Education System in Afghanistan

This level of education is handled by the Ministry of Higher Education (MHE). The ministry is responsible to fund, to make policy development, to establish the institutions, to advance teacher education level, and to work on quality assurance. The MHE has applied a high degree of control on both the academic and administrative affairs of governmental universities (Reviews, 2016).

There are two kinds of higher education (a) universities, and (b) higher education institutes that based upon their academic background will promote to the university level. As of 2020, the number of public universities was 24 and higher education institutes 15 in Afghanistan.

In addition to public higher educations, private higher education has dramatically increased since 2001 as well. As of 2020, there were 128 private higher education institutions, which mostly focus on profitable faculties like medicine, finance, management, ICT, etc. (MHE, 2020).

Because of reconstructing the higher education system after 2001, most of the governmental universities do not have Ph.D. level, academic members. As 2013 report of the World Bank, the majority of universities and higher education institutes had no, or one or two Ph.D. degree faculty members. Approximately, 5% of the academic members have Ph.D. degrees, 38% MSc, and 57% of all instructors at the time held only a bachelor's degree around the country.

The admission process to governmental higher education is based on the students' results in the higher education entrance examination (Kahnkor) and the capacity of the public universities and higher education institutes. The private universities commonly do not require Kankor examination and the students with a good economic situation can start any faculty he/she wishes.

Except for the faculties of engineering, pharmacy, veterinary, and medicine that require (5-7) years the other faculties last in a 4-years period. The majority of the higher education institutions and universities offer bachelor's degree education, and a handful of them have also begun to offer MSc programs. Collaborating with outside universities containing institutions in Germany, USE, Sweden, UK, and India helped this part of higher education in the country.

Before 2014, there were no Ph.D. programs active around the country. As of 2014, Nangarhar University as the first launcher of the Ph.D. program has started offering education at that level. Nowadays, totally, in public and private universities of Afghanistan 30 programs of Ph.D. and MSc have been generated that 16 MSc and 2 Ph.D. degree programs are being conducted in the public and the remaining 12 MSc programs are being implemented in the Private Universities (Reviews, 2016).

2.5.4. Agricultural Higher Education System in Afghanistan

It can be said that the establishment of the first School of Agriculture in Kabul (the capital of Afghanistan) in 1924 shows the beginning of agricultural education in Afghanistan. This school is now Kabul Agricultural College after passing several changes. Within the educational system, it is equivalent to the upper-secondary level (grades 10, 11, 12) and offers a secondary vocational agriculture program. Agricultural higher education was initiated in 1955 with the establishment of the faculty of Agriculture and Engineering (later have been separated into two faculties) at Kabul University.

A Veterinary School (also known as the Animal Health Assistants School) was established in 1959 by the Ministry of Agriculture which offers veterinary sciences, statistics, and forestry courses at the upper-secondary level (grades 10, 11,

12) and courses in agricultural disease and animal husbandry at the lower-secondary (grades 7, 8, 9) (UNESCO, 1971). Approximately at the same time, other vocational agricultural schools (grades 10, 11, 12) were opened by the Ministry of Education in Baghlan "it was established in 1961" (DW, 2009) in the northern region and by Helmand Valley Authority (HVA) in the southwestern part of Afghanistan (Paris, 1971).

In Afghanistan due to more than 40 years of interferences of foreign countries, internal and external destroying powers, agriculture education has been forgotten like other sectors. Fortunately, since 2001 concurrent the Taliban's regime falling till now the agriculture education system on the levels of high-school and higher-education (bachelor) has been improved and its influential role in changing the traditional and ancient methods of cultivating to modern, mechanizing, and utilizing from the effective ways are being remarked positively across 34 provinces of the country.

Lately, wars and conflicts have heavily damaged the agriculture sector and caused generating of many barriers to establishing agriculture education around the country. Before 2011, there were 30 agricultural high schools accessible to teach grades 10-12 by using different materials and outdated textbooks, In 2011, by the foundation of Agricultural Technical and Vocational Educational Training (ATVET) project, the outdated textbooks were updated and nationwide curricula were developed, and the teachers were trained the new teaching materials to use them. The ministry of education determined 123 (Appendix 3) numbers of Agriculture High Schools and Institutes as of 2019 (which provide offering a 14 years certificate in agriculture) throughout Afghanistan. The above project provide direct supports to the schools and institutes, which necessitate equipment, furniture, and other resources (TPEO, 2019).

In Afghanistan, the foundation of Higher Education was established in 1932 by establishing of Medicine Faculty in Kabul. For better administrating of Higher-Education Institutions, the Ministry of Higher-Education as the most accredited organ was established in 1977. Among 39 Public universities, 32 of them have agriculture faculty (Table 2.4). The number of departments is between 2-7 at all agriculture faculties. The agriculture faculty of Bamyan University has the furthest

departments (7 majors). Some agriculture faculties have been activated recently while do not have students and lecturers.

Table 2.4. The universities having agriculture faculty with their majors in Afghanistan

No	University	Major No.
1	Kabul	5
2	Nangarhar	6
3	Herat	4
4	Balkh	3
5	Agricultural Sciences and Technological University (Located in Kandahar)	6
6	Shaykh Zahid (Khost)	6
7	Paktiya	6
8	Alberoni	3
9	Bamiyan	7
10	Takhar	4
11	Kunduz	5
12	Ghazni	3
13	Baghlan	6
14	Sayed Jamaluddin Afghani (Kunar)	4
15	Laghman	5
16	Pharyab	5
17	Badakhshan	4
18	Parwan	4
19	Samangan	3
20	Badghis	4
21	Pajshir	2
22	Farah	2
23	Ghor	2
24	Oruzgan	2
25	Seripul	2
26	Paktika	2
27	Logar	2
28	Helmand	4
29	Daykundi	2
30	Wardak	2
31	Zabul (Mirwais Khan Nika)	2
32	Nemruz	2

Source: (MHE, 2020)

2.5.5. Objectives of Agriculture Higher Education in Afghanistan

The major objectives of agricultural higher education in Afghanistan are (a) training of technicians at a high level that is necessary for the nation's development. (b) to train administrative personal for the Ministry of Agriculture and other agricultural agencies, and (c) training of agriculture teachers for vocational agriculture schools and teacher training schools.

In vocational agriculture, the important objective is to train boys in general agriculture and to prepare them for higher education in agriculture. In primary schools, agricultural education is designed to impart knowledge of agricultural methods, and to develop an interest in agriculture (UNESCO, 1971). In agriculture faculties, students take standard courses in chemistry, botany, English, mathematics, plant physiology, and introductory courses in plant and animal sciences during the first and second years. Until 2012 at the beginning of junior (third year), students could choose their major but as of 2013 till now during the Kankor Exam students must choose their interested major.

2.5.6. Administration of Agricultural Education in Afghanistan

The Ministry of Education has direct control and supervision of its agriculture education schools in these levels: (a) Vocational (higher-secondary level) that contains agriculture colleges and vocational agriculture schools offering grades 10, 11, and 12. (b) Middle-school (lower-secondary level) includes schools offering grades 7, 8, and 9. (c) Primary level contains schools, especially in rural areas, offering agriculture in grades 4, 5, and 6.

Some schools that are offering secondary and primary education in agriculture are operationally and administratively under the Ministry of Agriculture, the HVA, and Rural Development Department, but the supervision and planning of the programs are carried out in co-operation with the Ministry of Education. Admission to higher education is by successfully passing of entrance examination for graduates of the general upper-secondary level (grade 13) or graduates of vocational agricultural schools (Paris, 1971).

At the end of this chapter, it is better to summarize the agricultural higher education systems among many countries and continents of the globe. Generally, in

the USA this system is according to the LGCUs that based on the 1862 Morill Act paves the way of creating a close relation and integration among three pillars of agriculture (teaching-research-extension). Each state university approaches the required curriculum and system, which is appropriate to the distinguished state based on its climatic condition. In the European countries, besides many other notable points, there are powerful students exchanging programs not only inside European countries but also even outbound of Europe. It is a valuable system especially for those who want to improve their language skillfulness and internationalize their acquired knowledge. Unfortunately, such programs cannot be carried out in most Asia countries especially in those, which have economic problems like Afghanistan. In Afghanistan and Turkey regardless of the beginning of agricultural higher education almost at the same time (in the mid-20th century). Turkey's system in the comparison with Afghanistan is better and gradually it has been developing. The most important reason for backing up the agricultural higher education system in Afghanistan is not having a stable, continuous, and nationwide powerful and influential governmental policy-making system to financially and academically provide the required situation to develop the system.

3. LITERATURE REVIEW

The main concept of this study is specifying the differences and similarities of agricultural higher education systems of Turkey and Afghanistan in the light of some other countries' agriculture education systems like the USA, EU, Asian countries containing China, and India. Therefore, it is required to have a review relating to the theories, models, and approaches of the earlier researches and by explaining, comparing, and commenting on them as well explaining the previous studies methodologies on comparing agriculture education systems to be distinguished which one was similar/dissimilar with this study?

This study is qualitative research, hence necessitates applying a suitable theory to simply gather, analyze, interpret, and get a result from the data. After an evaluation of some theories the author chose the "Grounded Theory[9]" in this study that rely on systematic data collection (see Figure 3.1) (Bitsch, 2005; Kelsey,K; Weeks,W; and Terry, n.d.). Glaser and Strauss published this theory in 1967 as the best suitable theory for conducting qualitative researches firstly. According to Fielding and Lee (1996), most qualitative researchers choose it in justifying their research approach especially the quantitative fields of their researches. The purpose of this theory is inductively developing a new theory from the research field after finishing the analysis of the primary data.

[9] Grounded theory is a methodology of evolving comparative theories which are grounded (built) in systematically collected and analyzed data.

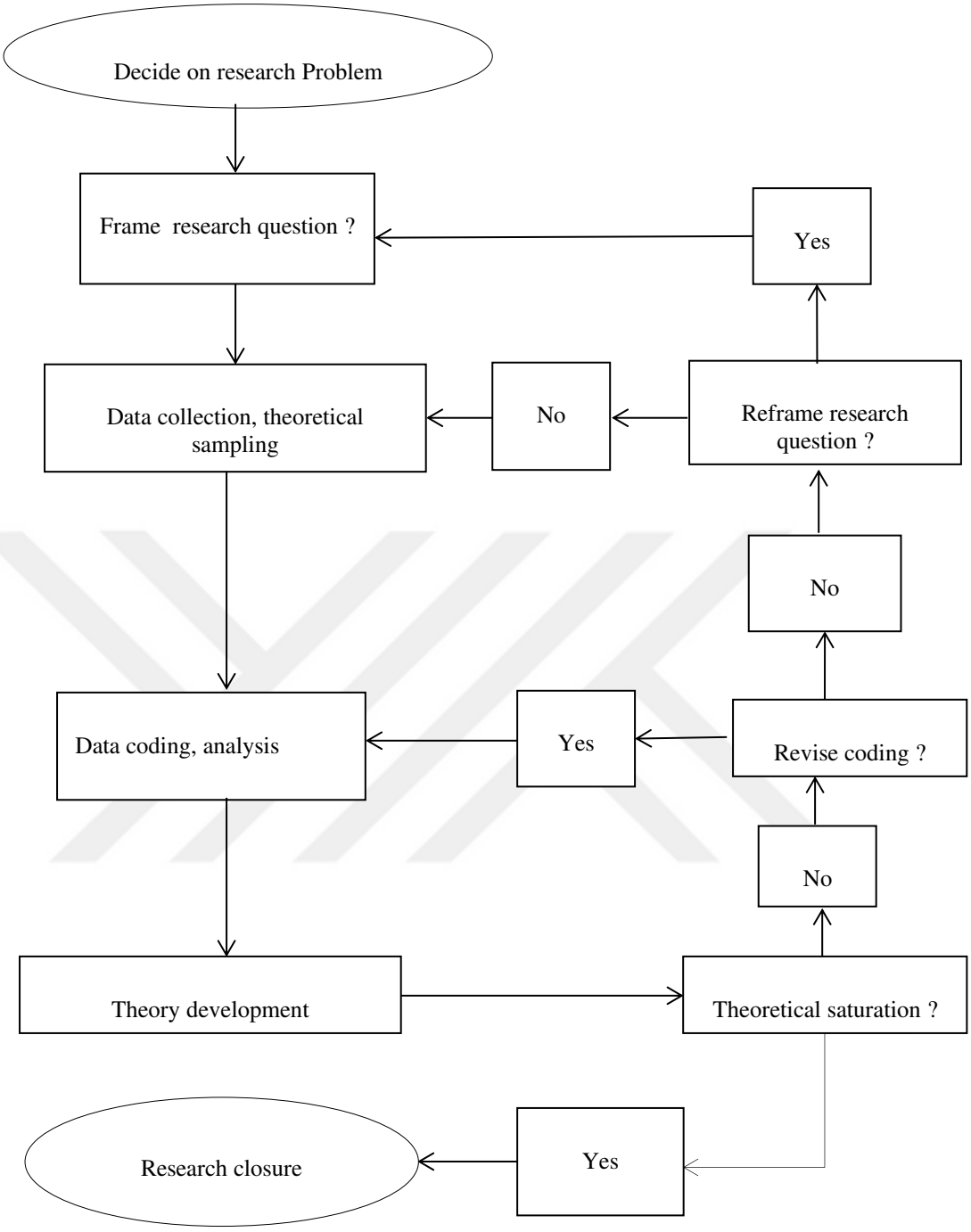

Figure 3.1. Grounded theory flow chart

Source: (Bitsch, 2005)

(Figure 3.1) shows the process of building the "Grounded theory method" that starts from deciding on research problem specifying and by systematically passing the framing of the research question, data gathering and coding, subsequent development of theory phases until reaching its distinctness point (Theoretical saturation[10]). Indeed, theory saturation indicates the pertinent research's closure point.

Literature review illustrates that the above theory has been used in many other relevant kinds of researches for instance in 2002 it was used by Kelsey, Weeks, and Terry in Oklahoma State (a south-central region of the US) (Bitsch, 2005) for analyzing and interpretation of the data. They conducted research entitled "Important issues facing agriculture in Oklahoma: An analysis of agricultural leaders' perspectives" in Oklahoma State University aiming to get a meaningful realizing of Oklahoma agricultural products participants' outlooks of the most important matters affecting the agricultural industry. They have found that agricultural literacy is a legitimate beginning point amongst the general population, which in turn leads to a shortage of sound agricultural policy. A lack of sound agricultural policy leads to an imbalance of power between agriculturalists, sprawling, taxation problems, environmental groups, commodity production centralization, and the need for adequate leadership to reverse the current downward trend of small and mid-sized agricultural production eases in America (Kelsey et al., 2002).

Accordingly, in (2002) Trexler and Meischen applied "Grounded theory" in their research to gain comprehension from agriculture and science education nationwide curricula criteria relating to the agriculture-food system and conducting an agricultural application in Minnesota Innovation Research Program (Bitsch, 2005) are examples of accommodating this theory.

Besides that, relating to the subject of this study "agricultural education system" around the globe there are many other noteworthy performed types of research and published academic papers using various methods in which require a

[10] It means thorough collecting and analyzing the additional data, new concepts will not be developed and the additional data do not require changes in characteristics, consequences, and conditions of the existing categories.

brief illustration here as follow in this study to clarify the similarities/dissimilarities and some other pertaining traits:

A similar study entitled: "Comparison of student knowledge understandings and perceptions toward agriculture before and after attending a Governor's School for agriculture" (Duncan & Broyles, 2006) was conducted by Duncan and Broyles who have been commonly used descriptive statistics indexes including percentages, frequencies, standard deviation, cross-tabulation, and many other pertinent ones that analytically was somewhat similar to this study's analytical phases. In conducting the subject under the title of "Are agriculture students more career ready? A comparative analysis of Illinois juniors" by Mouser, Sheng, and Thoron in 2019 that have used the SPSS program in analyzing the collected data. Three distinguished groups were chosen in their study. Based on their research findings agriculture education should be an important part of experiments if the public education targets providing of college and career readiness of manpower (Mouser et al., 2019).

There is no limitation in performing such research methods. For instance, to specify the students' awareness about international agriculture due to demographic variables in Kansas State University research has been accommodated by two professors (Harbstreit and Welton). The researchers have calculated means, standard deviations, analysis of variance, and correlation as Statistical Analysis System (SAS) to assess the level of students' awareness about international agriculture. Their research also covered all four classes of baccalaureate (freshmen, sophomore, junior and senior). One objective of their research was to clarify the influence of students' traits on their awareness of international agriculture. Based on the Analysis of variance (ANOVA) no statistically substantial difference was found at the 0.05 alpha level among variables in their research (Harbstreit & Welton, 1988).

To be a handyman researcher, diverse methods must be used to develop an interweaved set of methodological practices for a well understanding of the subject matter at hand. Accordingly, it is mentionable that applying a methodology to collect the required data in research is not possible only by applying questionnaire, survey, interview, etc. conversely, most of the researches necessitate three methods of data collection consisting of interviews, personal recollection, and archival. For example,

in illustration of the effects of lecturer versus experiential teaching method on cognitive achievement, retention, and attitude among high school agri-science (Johnson, 2014) students relying on interview-based data collection could not be enough therefore researchers of the subject have carried out the other pertinent methods too.

The questionable questions arrangement during conducting of a questionnaire is also important. Research conducted by Lawver and professor Lee to compare members and non-members of personal organization for vocational agriculture teachers in which they used Likert type of questionnaire in their research (Lawver & Lee, 1990) has a similarity in choosing the questionnaire type with this study.

In this study also besides mostly focusing on primary data compiled via applying the questionnaires the archival and other informatics sources also were used to gain the necessary data necessitated by sub-titles and sub-subjects.

Around the world, the literature review shows that European countries have the highest rank and the first scholars in agriculture that today's population are borrowed from them for their too important achievements and performed scientific activities like; Sir John Bennet Lawes who established an experimental station in 1841 at Rothamsted, England and had been engaged in the manufacture of phosphate fertilizer from bones, also in 1843 began superphosphate fertilizer manufacturing in a nearby village. The oldest Agricultural Experiment Station in the world is the Rothamsted station that has been continuously being prolonged yet. Since 1852, German states have established more than 70 publicly supported agricultural stations thorough searching the methods of applying science, especially chemistry to agriculture (Huffman & Evenson, 2006).

Even, in the 1800s, residents of the United States sent their children to Europe to become educated in which at that time only studying the humanities and arts was possible. Therefore, the subject "Agricultural Education; Building upon our roots" was done by Barick, KR (2013). The study was focusing on the discipline named education has its roots deep in the "history of agriculture and education in the United States". Although at that time, Harvard University was comparable to today's high

school, its establishment over three centuries ago signaled the starting of higher education in the New World. In the study, it was found that "education is the process or act to provide knowledge, competence, and qualities of behavior". Education as a discipline in the field of study concerns itself with the principles and methods of learning or teaching around the globe. What teachers do is the stimulus and what students do is respond to the stimulus. Some attributes consist of societal expectations, the effect, and the response of the learners. As McCormick (1985) noted, agricultural education has expanded beyond the initial "teaching function" to include extension education, research, and international education.

According to Kunkel and Skaggs's study, the worldly agriculture education system has passed many difficult phases to distinguish an adequate framework, methodologies, agendas, and principles that ultimately thorough developing the curricula within universities those difficulties have partly been ended (Kunkel & Skaggs, 2001). Furthermore, agriculture universities and faculties are the only source of future academic staff to perform various research by utilizing the existing theories, methods, frameworks, or creating new ones within them (Maguire, 2000).

As the conclusion of the literature review from the above-conducted researches relevant to this subject "Comparison of Agricultural Higher Education Systems between Turkey and Afghanistan," these points necessitate to be highlighted: (1) in EU, agricultural education is an integral part of general education. It is mainly aimed at those students who wish to pursue a career in the land-based sector, either as a manager or as employee. (2) Mainly agricultural education system of Turkey is formed similarly to European countries agricultural education system due to its geographical position and being a transcontinental country than Afghanistan. (3) The agricultural education organization varies according to the various national educational systems. (4) Financing or remitting of agricultural education is provided by either Ministry of Agriculture or the Ministry of Education. Agricultural colleges provide students with professional training encompassing different types of skills such as job-specifying, awareness of sustainability issues, technological skillfulness, etc. Carrying out specific research in clearing the agricultural higher education system between Turkey and Afghanistan is determined as an important subject to be

done and its results will be a potential resource and literature review to the next researches pertinent to the subject.

3.1. Summary of reviewed literature

In this study the "Grounded theory" as one of the most usable, suitable, and consistent theories for qualitative researches was used that as it's systematically stepping, firstly a questionnaire prepared and step by step the compiled primary data were coded, analyzed and a detailed interpretation has been written at the end under the resulting chapter.

Some other researchers like Kelsey, Weeks, and Terry who implemented research relating to agriculture leader's perspective in Oklahoma; Trexler and Meischen who have been conducted research related to getting a comprehension from agriculture and science education criteria of curriculum nationwide Minnesota Innovation Research Program (MIRP), and so on were applied and utilized from this theory (Grounded theory). The methodologies they were used are similar to the methodologies of this study.

As it is an accepted fact, day by day science improving results generating of new theories, methods, and frameworks of doing researches worldly, researchers apply some new and mostly harmonized theory and methods according to the research areas. For example, Duncan, and Broyles have done research relating to the comparison of students' knowledge understanding; Mouser, Sheng, and Thoron conducted research related entitled "Are agriculture students more career ready?" etc. that were not theoretically and methodologically similar to this study.

4. MATERIAL AND METHOD

In this study, the comparison of the agricultural higher education system in Turkey and Afghanistan is clarified in detail. For getting original data, as shown in (Table 4.1) 385 questionnaires have been conducted upon agriculture students of Turkey and Afghanistan in the selected sampling areas. The number of male respondents in this study was 290 persons or 75.3% and females 93 persons or 24.2%.

Table 4.1. Frequency of all respondents based on their gender

Gender	Frequency	Percent
Male	290	75.3
Female	93	24.2
Missing	2	0.5
Total	385	100

In Afghanistan, as a case study or sample areas, the students of agriculture faculties of Samangan Higher Education Institute and Baghlan University have been selected and they responded to the pertaining questionnaires. In Turkey as the sample or case study of the research, students of the agriculture faculty of Ondokuz Mayis University were selected. In Turkey, like other faculties, there are so many international students of agriculture from male and female classes in which besides Turkish students the students of other 14 foreign countries have responded to the questionnaire. Therefore, this generality contributes to reaching a high validation in this study (Table 4.2) that gives details about the number of participants. Among respondents of 16 countries, most of them were from Afghanistan then Turkey, Nigeria, Somalia, Mali, Indonesia, and from the remained countries respectively.

On the contrary, in Afghanistan due to not having the educational compatibilities and suitability of some other conditions for more than 4-5 decades there are not any overseas students in agriculture faculties, and all of those who responded to the questionnaires were Afghan citizens.

Table 4.2. The number of 16 countries participants

Country	Frequency	Male	Female
Afghanistan	271	208	62
Turkey	90	63	27
Mali	3	3	0
Somalia	3	3	0
Nigeria	3	2	1
Indonesia	2	1	1
Bangladesh	1	1	0
Turkmenistan	1	1	0
Sudan	1	0	1
Kazak	1	0	1
Uganda	1	1	0
Greece	1	1	0
Azerbaijan	1	1	0
Comoros	1	1	0
Togo	1	1	0
Tonus	1	1	0

4.1. Research Area (Field Work)

The main concentration in this study was analyzing Agricultural Higher Education Systems between Turkey and Afghanistan as expressed with more details under the early main and sub-titles. Besides covering the mentioned countries this study includes a brief overviewing of the agriculture education system in the world (USA, EU, China, etc.).

In Turkey, the University of Ondokuz Mayis, and in Afghanistan, the university of Baghlan and Samangan Higher Education Institute has been determined as research areas. In these universities, the questionnaires have been accommodated upon students of different classes and some graduated from the mentioned universities. The area of this study covers Turkey and Afghanistan's agriculture higher education system in detail. Besides, in Turkey due to the physically and presently existence of some international students such as; Nigeria, Bangladesh, Indonesia, Turkmenistan, Sudan, Kazak, Uganda, Greece, Azerbaijan, Comoros, Togo, Somalia, Mali, and Tunisia in some features comparing of Turkey's agriculture situation with the above countries also were pointed which covers them in a small level. Some respondents have been chosen by conducting a purposive sampling method from the case study universities of Turkey and Afghanistan. One of the

important targeted subjects of this study was finding some remarkable points of the agriculture education system in Afghanistan and Turkey consisting it's all sub-majors in which were active in one country and inactive in another one. Well realizing the research area requires giving concise information related to both countries' profiles.

4.1.1. Turkey's Profile

Turkey is a transcontinental country located between Asia and Europe (western Asia and Southeastern Europe. The country code is TR, the official language is Turkish, currency Turkish Lira, the difference between GMT is GMT+3 and calling code is +90. War of independence occurred on 19 May 1919 and the date of the Declaration of Republic is 29 October 1923. The total area is 783,356 Km^2. Its population as of 31-12-2020 estimated 83,614,362 million. The density of the population is 109/Km^2. Its GDP was estimated at $2.382 trillion and per capita $28,294 in 2020. The driving side is right and the date format is "dd.mm.yyyy".

Figure 4.1a. The political map of Turkey
Source: http://cografyaharita.com/haritalarim/4lturkiye-mulki-idare-sistemleri-haritasi1.png

Figure 4.1b. The flag of Turkey
Source: Flag of Turkey. en.wikipedia.org

*"*This country is surrounded by the Mediterranean, Aegean "*Ege*"**,** and Black seas, in three sides including south, west, and north. Moreover, the northeast of the country is surrounded by the Marmara Sea, which is called the regional water of Turkey containing the Straits of Dardanelles "*Çanakkale boğazı*" and Istanbul.

Turkey, officially known as the Republic of Turkey, is both an Asian and a European country. Its neighbor to the northwest is Bulgaria; Greece to the West; Armenia, Azerbaijan, and Iran to the east; Georgia to the northeast; Syria to the south; and Iraq to the southeast (Figure 4.1a).

Commonly the country's climate is moderate but not the same in every zone.

The south and Aegean zones have a Mediterranean climate; the Black Sea zone has a moderate and rainy climate; the east and southeast regions have a continental climate (Turkey, 2021).

It has 81 provinces. However, Ankara is the capital of Turkey but Istanbul is the most crowded province with approximately 15,415,197 population as of the first half of 2021, and it is the fifth-largest city in the world in terms of population (Review, 2021) and the first around Turkey, it is also the connector of Europe and Asia continents. According to the statistics, most of this country's residents are Turk ethnic (70-80)%, and the remaining are Kurds (about 20%) (Mutlu, 1996).

4.1.2. Afghanistan's Profile

In 1747, this country was established by Ahmad Shah Durani. It located at the center of South and Central Asia (Hakim, 2020) with approximately 39,542,518 population as of, March 17, 2021, based on Worldometer statistic (real-time world statistics). It is the 37th country in the world in terms of population. Its population density is 60/km^2, and the area is 652,860 km^2. 25,4% of the population is urban and the median age 18.4 years (*Afghan Population Estimates 1398*, 2019).

Figure 4.2a The political map of Afghanistan
Source: https://www.pinterest.com/pin/554083560385958909/

Figure 4.2b The flag of Afghanistan
Source: Afghanistan Wikipedia. en.wikipedia.org

In the south and east it has joint borders with Pakistan, in the west with the Islamic Republic of Iran, in the north with the countries of Turkmenistan, Uzbekistan, and Tajikistan, and in the northeast with China (Figure 4.2a). GDP as estimation of 2018 was $72.911 billion and per capita $2,024. The currency is Afghani, time zone UTC+4:30 solar calendar, the date format is "dd-mm-yyyy", and its driving side is right. Calling code +93, and internet Top-level domain (TLD) is .af.

Afghanistan has 34 provinces, Kabul is the capital of the country and the largest province in terms of population (Hakim, 2020). The most famous provinces are; Balkh, Herat, Jalal Abad, Kandahar, Badakhshan, etc. In Afghanistan, there are two formal languages (Persian and Pashto). As a foreign language English is the first then Arabic, Turkish, German, etc. respectively.

4.2. Sample Selection

The applied method of data collection in this study was the purposive sampling technique “it is a technique that the researchers rely on their judgment in choosing the number of participants in the research” (Hakim, 2020). Conducting this study upon all agriculture students of Turkey and Afghanistan was impossible because of the far location of the agricultural institutions from each other and causing waste of

time and money. Thus, to avoid these kinds of limitations it has been preferred to use a purposive sampling method.

In this research, the expanded formula by Cochran and "Likert[11] question type" was used. The below explanation is for specification of 5-point Likert scale that 5 explains the highest and 1 the lowest level of affection and between them, there are three other scales gradually (Warmbord, 2014).

$$N0 = t^2 s^2 / d^2$$
$$N0 = (1.65)^2 (1.25)^2 / (0.025\times 5)^2$$
$$NO = (2.75)(1.56)/0.017 = 272.25$$
$$N0 = 272$$

In the above formula N0 (272) is the minimum sample size in research using this formula to define the number of samples, "t" (t=1.65) accepted as corresponding to the alpha level of .01, "s" is the standard deviation in the accessible population (generally there is 4 interval in a 5-point Likert scale, so the standard deviation calculated 1.25 (5/4=1.25), "d" shows the error limitation which is accepted from the mean. The minimum sample size (N0) was calculated at 272. In this study, 385 questionnaires were conducted, the collected data from all respondents were used for data analysis.

Three steps have been considered in the collection of the necessary data from Afghanistan and Turkey: in the first step two countries were selected for getting the primary data and in the second step in Turkey Ondokuz Mayis University (OMU) because of being an influential central and zonal university was selected alone, in Afghanistan the sample selected universities (Baghlan and Samangan) were much younger and newer than OMU. Thus, at the same time, two universities were selected.

In the third step from three universities the students of first to fourth classes and few students from MSc and Ph.D. Levels were selected and all of them have responded to the questionnaire (Table 4.3) expressing that most of the respondents were students of the fourth class (127 persons) and the lowest from first class (54

[11] It is a measure applied to express people's attitudes, ideas, and thinkings on a subject. varies from one utmost to the lowest. for instance; "extremely likely" to "not all likely". Likert scale questions constitute one of the most greatly used instruments in measuring popular opinion, social and educational research. Rensis Likert, a psychologist in 1932, developed it. The most popular types of this scale are; 4, 5, and 6 points scales for example 5 points Likert scale can be prepared like this order; 1- very poor, 2- poor, 3- Average, 4- Good, and 5- Excellent.

persons), the total number of bachelor degree (312 persons) is more than total number of MSc and Ph.D. students (59 persons).

Table 4.3a. The participants' classification based on their classes

Class levels	N
First	54
Second	87
Third	58
Fourth	127
MSc	43
PhD.	13

Totally, in this research, the students from 9 different departments have participated. However, in Turkey, there are 9 departments active but in Afghanistan around the country, the majors' number of agriculture faculties is between 2-7 active departments and attract new students annually. So, this is the reason that the numbers of respondents are extremely different from department to department (Table 4.3b).

Table 4.3b. The participants' classification in terms of their departments

Department	Frequency	Percent
Agricultural economics	115	29.9
Horticulture	92	23.9
Animal husbandry	20	5.2
Plant protection	17	4.4
Agricultural machinery and technology	6	1.6
Agricultural biotechnology	13	3.4
Agricultural structure and irrigation	9	2.3
Field plants	77	20.0
Soil science and plant nutrition	23	6.0

Among all departments, most of the participants were from the agricultural economics department (115 persons), and the lowest participants from the department of agricultural machinery and technology. The reason depends on inactivating of some departments in Afghanistan while most of the respondents were Afghan.

4.3. Data Collection

In this study, by distributing a compatible questionnaire to the students of three academic agricultural institutions in both countries the required data were collected.

The applied questionnaire consisted; respondents' personal information, their convincing and background of being or not being an agriculture graduate, the system of education, comparing, opportunities and so many other related questions. The accommodated questionnaire was prepared after reviewing many other questionnaires that have been used by previous researchers like the "teachers' survey in Antalya prepared by Prof. Dr. Kürşat Demiryürek, Helal Demir entrepreneur survey, etc." to be a pattern for making the best and acceptable questionnaire at this subject. In this study 385 students including both active and graduate of three levels (BSc, MSc, and Ph.D.) were selected and responded to the questionnaire. Through direct contributions and help of academic members, the questionnaires were conducted upon students. In Turkey, most of it was distributed to students via electronic links, and in Afghanistan, more than three of four related questionnaires were conducted face to face. The period of data collection was "12.10.2020 – 15.11.2020" determined by the Social and Humanities Ethic Board of, Ondokuz Mayis University.

4.4. Data Analysis

The considered analysis method in this study was generally descriptive analysis to find the main descriptive characteristics of the collected primary data from 385 respondents. Finding Central Tendency Indexes (mean, median, etc.), Dispersion indexes comprising; standard deviation (Std. deviation), range, standard error of the mean[12] (S.E. mean), variance[13], factor analysis, U-test, validity, reliability, etc. Have been used in this study thorough conducting a Statistical Package for Social Science (SPSS) program. All the variables were categorized under both nominal and ordinal types of measurement. Moreover, the variables did not have a normal distribution. So, generally non-parametric statistical measurements were used in analyzing the data. The answers of respondents were measured by mainly using a 5-point Likert-

[12] Shows the standard error of sampling averages selected in the same largeness. As it becomes small, the estimations will be well directed and sagacious. Std. Error Mean is found by dividing Std. deviation on the square root of samples or observations number.

[13] The fact of quality of being inconsistent. Its square- root is called standard deviation that shows how much far every data is from the general mean. As Std. deviation increases, the distribution becomes widespread. For instance, it is supposed that the average height of 50 individuals is 175cm, and the Standard Deviation is 4. It means the height of individuals is "175±4 namely, between 171-179 cm".

type scale that 5=highly effective, 1=somewhat less effective and 2, 3, 4 respectively describe the effectiveness or ineffectiveness degrees between 1-5.

To reach the expected findings/results of the research, to test the hypotheses specified in the first chapter, and to find a solution to the research problems, conducting some statistical analysis are necessary. After modifying a suitable statistical analysis, the acquired results will be concisely interpreted to be understandable and reflect the realities of the subject.

Analyzing[14] of the primary data shows that as changing the education system around the world from face to face to distance in all countries (16 selected countries in this study) most of the respondents (60%) rejected the online system, 33.5% accepted it. In Afghanistan and Turkey acceptance or rejection proportion of that system is almost the same (in Turkey 65% rejected, 35% accepted, and in Afghanistan, 66% rejected and 34% accepted online education system) (Table 4.4a).

Table 4.4a. Online education remarking around Turkey, Afghanistan and many other countries

Online education deliberation	Turkey	Afghanistan	Other countries
Acceptance	35%	34%	35.50%
Rejection	65%	66%	64.50%

Across all involved countries, 55.5% of participants declared their satisfaction from ongoing agriculture schools and institutes' methods of learning training. Graduation from agriculture faculty is 77.7% influential in finding job opportunities. Job opportunities inadequate value in Turkey found further than in Afghanistan. In Afghanistan, it was found 30%, while in Turkey, 64.2% that is to say, in Afghanistan, graduation from agriculture is much more influential in terms of finding job opportunities in this comparison with Turkey.

The consent ratio of students from the current system of agricultural institutions differs between Turkey and Afghanistan (in Turkey 80.4%, and in Afghanistan 10.45% of respondents declared their satisfaction) (Table 4.4b).

Table 4. 4b. Job opportunity and ongoing agriculture education system remarking

	Turkey	Afghanistan	Other countries

[14] In this study, descriptive analysis was commonly used that contains all principles and methods used in describing of population and sample descriptions and characteristics.

Job Opportunity	64	30	77.7
Agriculture Institutes Education System	80.4	10.45	55.5

The measurement index is %

4.5. Reliability and Validity

In researches, the quality and correctness degree is assessed by specifying their reliability and validity. That is to say, reliability and validity express that how well some things are measured by a method, technique, or test. Validity explains a measure's accuracy, but reliability the consistency of the measurement.

However, they are closely related to each other but explain different meanings. A reliable measurement could not be valid but a valid measurement can be reliable. In another word, validity requires much more correctness than reliability. Reliability can be approximated by comparing the various versions of the same measurement. Contradictorily, validity assessing is harder than reliability. Validity can be approximated by comparing the results with the other relevant theories or data.

Validity should be remarked at the very earliest steps of research as of the researchers' decision on how they should gather the aimed primary data. But, reliability necessitates considering throughout the process of data compiling. The technique or tool which are used in data collection should to contribute getting stable, reproducible, and concise results.

4.5.1. Validity

Validity refers to how a method accurately measures what is intended. The researches having high validity indicate their corresponding to real traits, differences, etc. in a physical or social world. Validity methods are usually split up into various types: 1) construct validity, 2) content validity, and 3) criterion validity (*Validity vs. Reliability*, n.d.).

In this study to respond to the relevant questions such as: "in which degree a used scale was correct?". So, construct validity was used. To carry out this validity it was possible to benefit from factor analysis, internal consistency, cluster analysis, and hypothesis analysis techniques. Factor analysis, which is a statistical technique

often used in social sciences for developing measure and examining construct validation and targeted to measure the factors in a few numbers by gathering the variables which are similar in construction to each other (Büyüköztürk, 2019).

To examine the construction of the factors, the results of (Varimax) basic components are shown in (Table 4.5a). KMO value is used to show, is the data construction appropriate to approaching factor analysis? This value should be >0.60 to express the factorability of the data. In this study KMO=0.72 and Bartlett's Test of Sphericity illustrates the relation between variables considered as partial-correlation regulations, the significant degree was less than 0.05 (Sig.=0.00<0.05). It indicates that (Ho) is rejected and (Ha) accepted. In another word, it means the variables have meaningful differences from each other, they are statistically conceptual and the averages are not equal.

Table 4.5a Results of factor analysis (rotated basic component analysis)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.721
Bartlett's Test of Sphericity	Approx. Chi-Square	301.176
	Df	45
	Sig.	.000

By remarking and comparing the outputs of (Table 4.5b) "commonalities" and (Table 4.5c) "Total variance explained". It is cleared that from 10 variables chosen in analysis, those that have bigger "Initial Eigenvalues" than 1 can be added or summarized under three factors (Table 4.5c).

Table 4.5b Communality values of variables

	Initial	Extraction
BSc effecting on doing agriculture	1.00	0.51
The contribution of AHES in problem solving	1.00	0.43
Researchable areas for applied lesson	1.00	0.75
Rule of AHES in greenhouse/soil preparation	1.00	0.69

Rule of AHES in disease insect control	1.00	0.62
Rule of AHES in packaging sorting	1.00	0.62
Rule of AHES in information technologies	1.00	0.47
In AHES pleasure degree from practical education	1.00	0.25
Happiness degree from major teachers	1.00	0.52
Helpfulness of books	1.00	0.57

Of the measure, the modified variance by these three factors is 54.3%. The specified three factors' common variance changing is seen between 0.25-0.75 (Table 4.5b). According to these values, three factors' common variance covers a big amount of variance across all variables.

Table 4.5c Total variance explained

Component	Initial Eigenvalues		Rotation Sums of Squared Loadings		
	Total	% of Variance	Total	% of Variance	Cumulative %
1	2.8	28.5	2.2	22.3	22.3
2	1.5	14.9	1.9	18.8	41.1
3	1.1	10.9	1.3	13.2	54.3
4	1.0	10.0			
5	.8	8.2			
6	.7	7.3			
7	.6	6.2			
8	.6	5.6			
9	.5	5.0			
10	.4	3.6			

Based on "Initial Eigenvalues" in this study, three important factors have been specified. Another way of determining the important number of factors among the chosen variables is using a graphic; the relevant graphic was constructed by using component numbers and Eigenvalues.

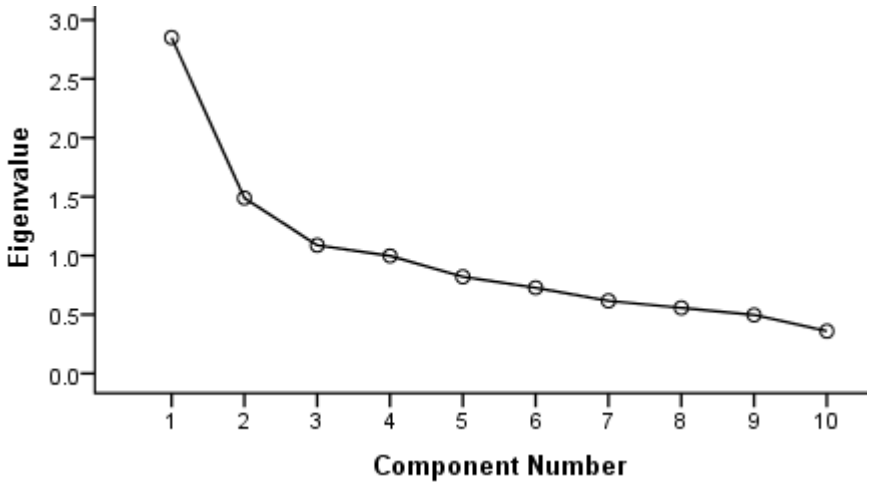

Figure 4.3. Scree plot indicating the number of factors

In the above graph after the first factor, a high rapid decline is seen that indicates it can be grouped under one factor. However, after the second and third factors, also, a decline is seen but it is less than the declining level after the first factor. Therefore, selecting three factors are appropriate. After the third factor, the moving of the graphic is generally horizontal and an important decrease is not seen. That is to say, the variance contribution of the fourth factor and after that are close one to another (Figure 4.3).

To simply define the three important factors related to containing the variables, the result of the rotated component matrix (Table 4.5d) shows that 1-4 variables "1- Rule of AHES in greenhouse/soil preparation, 2- Rule of AHES in disease insect control, 3- Rule of AHES in packaging sorting and 4- Rule of AHES in information technologies" should be considered under the first factor, 5-7 variables "5- Helpfulness of books 6- Happiness from major teachers and 7- The contribution of AHES in problem-solving" under the second factor, 8-10 variables (Table 4.5e) "8- In AHES pleasure degree from practical education, 9- Researchable areas for the applied lesson and 10- BSc effecting on doing agriculture" under the third factor have given the high value.

Table 4.5d Rotated component matrix results

Variables	Components (Factors)		
	1	2	3
Rule of AHES in greenhouse/soil preparation	.81	.15	.05
Rule of AHES in disease insect control	.78	.08	.02
Rule of AHES in packaging sorting	.65	-.18	.40
Rule of AHES in information technologies	.60	.31	-.10
Helpfulness of books	-.03	.68	.31
Happiness from major teachers	.26	.67	-.07
The contribution of AHES in problem solving	.03	.65	-.01
In AHES pleasure degree from practical education	.31	.37	.14
Researchable areas for applied lesson	.06	.06	.86
BSc effecting on doing agriculture	.07	.48	.52

The most influential variables used in this study are three factors. The first factor states 22.3%, the second factor 18.2% and the third factor 13.2% of total variance respectively related to the measurement. Three factors explain 54.3% of variance that is changeable between (0.25-0.75)%.

After rotating factors, the first factor of measure formed from four variables (1-4), the second factor from 3 variables (5-7), and the third one also from three variables (8-10). In the first factor the loading value is changing between 0.60-0.81, the second is changing between 0.65-0.68 and the third one is changing between (0.14-0.86) percent. Based on the variables placed under each factor appropriately, the first factor was nominated "Betterment of agriculture" the second "Learning-education assessment" and the third one was entitled "Applied education" (Table 4.5e).

Table 4.5e Summarization of conducted factor analysis on validity specifying

Variable No	Joint factor variance	Factor 1 loading value	Factor 2 loading value	Factor 3 loading value
Rule of AHES in soil preparation	.690	.81	.15	.05
Rule of AHES in disease-insect control	.620	.78	.08	.02
Rule of AHES in packaging sorting	.616	.65	-.18	.40
Rule of AHES in information technologies	.472	.60	.31	-.10
Helpfulness of books	.565	-.03	.68	.31
Happiness from major teachers	.521	.26	.67	-.07
Contribution of AHES in problem solving	.428	.03	.65	-.01
A.H.E.S. practical education	.253	.31	.37	.14
Researchable areas for applied lesson	.753	.06	.06	.86
BSc effecting on doing agriculture	.509	.07	.48	.52

Finally, according to the findings of the above sub-statistical steps, it has been cleared that this research statistically had an acceptable validity level (more than 50%) and among variables, there is a conceptual statistical difference (Sig.<0.05), the null hypothesis (Ho) was rejected and alternative hypothesis (Ha) was accepted in this research.

4.5.2. Reliability

Reliability shows how a method measures something consistently. The measurement is remarked reliable whether the same result can be achieved under the same situations by applying the same methods consistently.

If a researcher takes the accommodated test again, will get a similar result or dissimilar. Whether a test concludes the same or similar result for a person who repeatedly does the test, it is said that the person reliably measures a trait. Methods of reliability are usually split up into various types; 1) Test-retest reliability, 2) inter-rater reliability, and 3) internal consistency reliability (*Validity vs. Reliability*, n.d.).

In this study, correlation (r) is used as a reliability-coefficient that shows how much of the individual differences depend on real effecting factors and how much is mistakenly caused by unknown factors.

Kuder Richardson-20 (KR-20) and Cronbach alpha (a) reliability, the two Internal-consistency methods (Büyüköztürk, 2019) are used here to determine the wanted coefficient. KR-20 reliability test is used for variables that are two optional like correct/incorrect, yes/no and Cronbach alpha (a) reliability[15] is used for determining the reality of variables in which have more than two optional responses.

Total correlation of all variables used in this scale is changing between 0.25-0.54. To calculate the Mean Rank (MR) values "because of not having normal distribution instead of Independent T-test the Mann-Whitney Test" was used. Therefore, t-values of the first and last 27% of variables were substituted with mean rank values achieved from Mann-Whitney Test (U–test) results. Based on its results 50% of the variables' (1-4 and 8) Sig. is more than 0.05 so they are not statistically conceptual, the other 50% of them (5-7 and 9-10) are meaningful (Sig.≤0.05). These findings illustrate being average reliability in this study (Table 4.6a).

Table 4.6a Variable analyzing results to specify the reliability

Variables	Item-Total Correlation[1]	M.R (the first 27%) [2]	M.R (the last 27%) [2]
BSc effecting on doing agriculture	0.35	110.23 ^{no}	95.07 ^{no}
The contribution of AHES in problem solving	0.25	81.76 ^{no}	82.34 ^{no}
Researchable areas for applied lesson	0.26	93.54 ^{no}	92.34 ^{no}
Rule of AHES in greenhouse/soil preparation	0.54	101.58 ^{no}	94.38 ^{no}
Rule of AHES in disease insect control	0.46	108.25***	88.34***
Rule of AHES in packaging sorting	0.36	111.74***	85.87***
Rule of AHES in information technologies	0.41	112.12***	85.47***
AHES pleasure degree from practical education	0.35	88.32 ^{no}	89.87 ^{no}
Happiness degree from major teachers	0.37	107.99**	93.16**
Helpfulness of books	0.32	97.93**	80.62**

[1] $n = 385$ [2] $n_1 = n_2 = 104$, ^{no} (Sig. >0.05), ** (Sig. ≤ 0.05), *** (Sig. < 0.01)

For the reason of not having normal distribution instead of Pearson Correlation Coefficient, "Spearman-Brown correlation coefficient" was used in this analysis. Generally, the values show an intermediate relationship among all variables, the relevant Sig. values are less than 0.05 so it illustrates being a meaningful statistical

[15] Alpha (a) coefficient has been improved by Cronbach so is called Cronbach alpha (a) reliability test.

concept. The least determination value is between "BSc effectiveness and AHES in packaging (r=0.139, r^2=0.019)", r^2 indicates being a low affection among the mentioned variables. The largest value of r^2 "(0,483)2 is 0.23, which means "between AHES in packaging and AHES in technology" there is a relation. Namely, the packaging is affected 23% by technology; if technological developments increase, it will positively affect packaging methods. Like these variables, the others have similar relation and affecting degrees upon themselves (Table 4.6b).

Table 4.6b Nonparametric correlation of some variables on behalf of all others

Nonparametric Correlation	C.C & Sig.	BSc effectiveness	Contribution in problem solving	AHES in packaging	AHES in technologies	Helpfulness of books
BSc effectiveness	C.C	1.000	.300**	.178**	.139**	.261**
	Sig.		.000	.001	.010	.000
Contribution in problem solving	C.C	.300**	1.000	.240**	.227**	.162*
	Sig.	.000		.000	.001	.024
AHES in packaging	C.C	.178**	.240**	1.000	.483**	.197**
	Sig.	.001	.000		.000	.000
AHES in technologies	C.C	.139**	.227**	.483**	1.000	.237**
	Sig.	.010	.001	.000		.000
Helpfulness of books	C.C	.261**	.162*	.197**	.237**	1.000
	Sig.	.000	.024	.000	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

5. RESULTS AND DISCUSSIONS

5. 1. Results and findings

The results and findings of this study illustrate that agricultural higher education systems throughout the world vary from continent to continent even country to country. For example in most countries of the EU after finishing a bachelor's degree, if a student hopes to continue a master of science (MSc) degree in agriculture can do it and the chosen lessons are evaluated as the continuation of the bachelor's degree. The students learn agricultural professions through class attending, research stations, or in a combination of theoretical and empirical methods. In all EU Member States, agricultural education is an integral part of general education and training. Based on the European statistical office, there are three levels of agricultural training programs: (1) Practical agricultural experience, (2) Basic agricultural training, and (3) Full agricultural training. Whereas, in the USA agricultural education system is based upon grant-colleges of agriculture, which focus on three main pillars of agriculture evolvement including research, teaching, and extension.

In most Asian countries containing Turkey, Afghanistan, India, etc. mostly the approached agricultural education systems of EU and USA are being followed with a bit differences based on their climatic and other conditional changes. For instance, in Turkey, as the first Germans advisor group who was invited in 1927 to advise and contribute in initiation of the agriculture education system, while establishing Agricultural Higher Institute in 1937. it can be said that the basis of this country's agriculture education system has been put similar to the European system. (Tosun, 1986).

MSc programs of agriculture education almost in all countries especially those which are approaching credit system with a thesis and non-thesis for example in the USA requires 22-25 credits with an average of 9 credits of thesis, totally of 30 credits are sufficient for graduation and without thesis MSc programs can require up to 36 credits.

However, in the USA, grant-colleges of agriculture in each state have an independent rule and regulation, which is regulated based upon the conditions of the state and suggested bill of Representative Justin Smith Morrill in 1862 (Croft, 2019).

On the contrary, the promotion and development of agricultural education in different countries of Asia is run by constitutional mandates, special laws, ministerial decrees, presidential and executive orders. Furthermore, due to financial, logistic, and so on constraints, they cannot independently progress the activities that are necessitated.

The beginning of agriculture education varies from country to country between Turkey and Afghanistan also there is about a one-century difference. In Turkey, establishing of an agriculture school in Ayamama Farming in 1848 (Naim, 2019) determines the starting of agricultural education training whilst in Afghanistan, establishing of the first School of Agriculture in Kabul in 1924 shows the beginning of agricultural education around the country (Table 5.1a). Initiation of agriculture higher education in Afghanistan was in 1955 by the establishment of faculty of Agriculture and Engineering at Kabul University while in Turkey establishing of the first agriculture faculty was in 1948 in the formation of Ankara University (Naim, 2019). It is noticeable that in Turkey after the 1980s, the establishment of agriculture faculties has been rapidly increased (Arslan Selçuk, Aksoy, Baboğlu, İlkten, Özkan, Katkat, Sarı, 2011).

In Turkey, the first-12th classes (4 years elementary, 4 years primary, and 4 years secondary) school are called compulsory education but in Afghanistan, nine years of education including primary education for 6 years, and the lower secondary education for 3 years are compulsory.

The Ministry of National Education in Turkey runs the educational administration of the country. The central government is responsible for all educational expenses, and it is provided from national budget (about 10%) (Table 5.1a).

Whereas, in Afghanistan besides the Ministry of National Education that is responsible to run the educational activities from primary to pre-bachelor degrees; the Ministry of Higher Education runs related educational activities of undergraduates and post-graduate degrees. The higher education sector includes both universities and higher education institutions. The ministry of higher education in Afghanistan functionally is similar to the Higher Education Organization *"YÖK"* of Turkey (Reviews, 2016).

The academic calendar in Turkey generally starts in mid-September and extends through to mid-June, with some variations between urban and rural areas. Schools are in term-time for five days per week (from Monday to Friday) in a total of "35–40" hours. In all over the country, there is a two-week winter break between January-February. Most of the elementary school students dress similarly in a type of uniform to avoid any social class differences between rich and poor students.

In Afghanistan, the academic calendar commonly begins on 22 March. According to climatic conditions there are remarkable differences between tropic and cold provinces. Schools are in session for six days per week (Saturday-Thursday). Around the country especially in the big cities, the private higher education sector has been dramatically grown since 2001 and nowadays, the number of private Higher Education Institutes arrived to 128 that are more than two-fold of public or governmental universities.

Around the country, the first Higher Education was instituted in 1932 by establishing of Medicine Faculty in Kabul. To better administrate the Higher-Education Institutions, the Ministry of Higher Education as the most accredited organ was established in 1977.

Agriculture faculties' students across all over Afghanistan take standard courses including chemistry, botany, English, mathematics, plant physiology, etc. during the first and second years, and in the third and fourth years of a bachelor degree, they take the specialized lessons relevant to each specific major.

43 universities around Turkey have agriculture faculty in their formation under different names and actively 38 of them annually admit students (TMMOB, 2020). Whereas, in Afghanistan as of 2020, there was a total of 39 public higher educational organizations including 24 universities and 15 higher education institutions that 32 of which have agriculture faculty (Table 5.1b). Ph.D. programs are almost non-existent in Afghanistan. Totally, in public and private universities of Afghanistan 30 programs of Ph.D. and MSc have been generated. Nangarhar University launched Afghanistan's first-ever Ph.D. program in 2014. Others are under development (MHE, 2020).

Table 5.1a. Comparing of education sector between Turkey and Afghanistan

Country	AS	AHES	CE	ACS	ACF
Turkey	1848	1948	12 years	mid-Sep.	mid-Jun.
Afghanistan	1924	1955	9 years	Mar., 23	Dec., 21

AS= Agriculture starting

AHES= Agricultural higher education starting

CE= Compulsory education

AC= Academic calendar starting

ACF= Academic calendar finishing

Table 5.1b. Comparing of education sector between Turkey and Afghanistan

Country	WP	DS	UA	PhD degree	EB
Turkey	Mon.-Fri.	Similarly	43	In most universities	10%
Afghanistan	Sat.-Thu.	Dissimilarly	32	Almost non existing	2%

WP= Weekly program

DS= Dressing system

UA= Universities having agriculture

EB= Education budget

Moreover, this chapter includes explaining the findings related to the job opportunities in the agriculture sector, general education system, agricultural education system, specifying many relevant features, influential factors in agriculture selection as an education major, etc. that are explained in detail as follow.

5.1.1. Agricultural higher education role in finding new job opportunities

To indicate in which degree, agricultural higher education will be a helper factor to find new job opportunities students were asked to answer or rate how do they perceive finding jobs in the agriculture sector after graduation. It was measured by using a nonparametric correlation measurement "Spearman's correlation coefficient ", and cross-tabulation. Based on the results, correlating of job finding in the agriculture sector of Turkey was more than in Afghanistan "r^2=0.2362= 0.056" while in two selected universities of Afghanistan (Samangan and Baghlan universities) it was found "r^2=0.0242=0.0006" and "r^2=0.1152=0.013" respectively less than its value in Ondokuz Mayis University. That is to say in Turkey job

opportunity in the agriculture sector is affected 5.6% and in Afghanistan (0.068-1.3) percentage by finishing agricultural higher education (Table 5.2).

Table 5.2a Job opportunities correlation to Agriculture education

Case Study Universities	N	Sig.	Spearman's Correlation
OMU	123	0.008	0.236
Samangan	99	0.814	0.024
Baghlan	130	0.19	0.115

The job opportunity was rated based on the cross-tabulation calculation, a descriptive statistical measurement. In Afghanistan, in Samangan Higher Education Institute it was found 63%, and in Baghlan University 57%. These percentages illustrate more effectiveness of agriculture education on job opportunities than Turkey. Because, in Ondokuz Mayis University the case study or research field in Turkey, it was calculated 52% (Table 5.2b).

Table 5.2b Effectiveness of agriculture education on job opportunities

Research Fields	Job opportunity
OMU	52%
Samangan	63%
Baghlan	57%

The result shows that finding a job after graduation from agriculture faculties is easier in Afghanistan than in Turkey. In another word, Afghan students have higher chance of finding a job than Turkish ones. The reason refers to the newly activating of agriculture faculties in Afghanistan. Almost all the agriculture faculties in Afghanistan have been being activating since 2001. So, it means nowadays, around the country there are needs to hire the agriculture graduated persons more than in Turkey. In Turkey, there were more graduates than employment due to more faculties than sector needs or employment, etc. Also, the World Bank report supports these findings. Based on the World Bank report, in Turkey, the agriculture employment ratio was 18.2% in 2020 (*Turkey - Employment In Agriculture (% Of Total Employment) Forecast,* -, 2020). But in Afghanistan the agriculture employment ratio was 42.5% in 2019 based on the World Bank report (*Afghanistan: Employment In Agriculture: Modeled ILO Estimate: % of Total Employment | Economic Indicators*, 2021).

5.1.2. The agriculture education system in Turkey and Afghanistan

In Turkey, agricultural educations have been being offered in agriculture schools and faculties. In Afghanistan, although the agriculture education and training systems are similar to the current system of Turkey. But, due to passing so many difficulties and problematic educational processes it could not be developed and modernized gradually as Turkey's system.

Relevant to agricultural education systems of Turkey, in personal training, one of the other remarkable characteristics is the dependence of Agricultural Professional High-Schools to Higher Education Institutions (HEI), which shows their activities under the determined curriculum of the universities. Although the subjects of Professional High-Schools necessitate universities certifying and admission, they are giving different education and training systems appropriately to climatic conditions of various and dissimilar zones (Direk, 2012).

While in Afghanistan, the Agriculture High Schools and Teacher Training colleges of Agriculture are generally under the formation and supervision of the Ministry of Education, not universities or the Higher Education Ministry.

Totally, in Afghanistan, there are 123 agricultural high schools and institutes (Appendix 3). While in Turkey, there are about 20 agricultural high schools and many institutes that are being managed under supervising of some universities not independently as Afghanistan's current administrative system of agriculture high schools and institutes.

5.1.3. The role of today's AHES of Turkey's and Afghanistan's in the future

Related to Turkey's and Afghanistan's current agriculture education systems it was found that the system will not completely and satisfyingly contribute to the future agriculture education systems of both countries. In the sample universities, the students were asked to rate the effectiveness of the ongoing system in the future. When comparing the two countries, in Afghanistan more respondents perceived its contribution than Turkish ones. Relevant predictions and results show that the ongoing agriculture education will averagely contribute to the future betterment of agriculture. The system will contribute 50% to the future of Turkey's agriculture

education system and 65% to the future of Afghanistan's agriculture education system (Table 5.3).

Table 5.3. Turkey's and Afghanistan's agriculture education role in the future

The ongoing agriculture education system	Turkey	Afghanistan
Contributing the developing of future agriculture system	50%	65%

5.1.4. The factors causing students to choose agriculture

According to the analysis results of primary data in this research, there were a lot of factors around Turkey, Afghanistan, and many other countries that force the students to select agriculture educational centers at school or university levels. Most of those factors are discussed here:

5.1.4.1. Family Agricultural Background

The family agricultural background has an important role in the selection of agriculture faculty. In this study, most of the participants' families (60%) around both countries had an agricultural background, and it made them select agriculture faculty to take the future responsibilities of their arable lands and administrating their agricultural activities. Comparing this variable between Turkey and Afghanistan shows there is a statistical difference. In Afghanistan 68%, and in Turkey 52% of families were engaging in the agriculture sector (Table 5.4a).

Table 5.4a Family Agricultural background in Turkey and Afghanistan

Family agriculture entertainment	Frequency	Percentage
Turkey	47	52
Afghanistan	179	68

5.1.4.2. Gender differences

Gender is another effective factor in choosing agriculture. Mostly, due to requiring much more physical and practical activities, the male class is much more suitable to choose agriculture faculty than female class. The results of this research illustrate that in Turkey 70% and in Afghanistan 77% of male classes chose agriculture faculty. In Turkey, 30% of females have selected agriculture faculty that is more than in Afghanistan. In Afghanistan, it was found that 23% of females have chosen agriculture faculty (Table 5.4b).

Table 5.4b Agriculture selection in terms of gender in Turkey and Afghanistan

Country	Gender				Total
	Male		Female		
Turkey	63	70%	27	30%	90
Afghanistan	208	77%	62	23%	270

In Afghanistan, due to governing of many barriers like; insecurity in many agricultural areas, not permitting females to work, and to go without the accompaniment of their close relatives (father, brother, husband, etc.) from their residency to workplaces. Therefore, they cannot select agriculture faculty, as they want. In Turkey, there are so many facilities for females to take what faculty they wish, the females have complete authority to choose their future profession. In this research as mentioned the numbers of Turkey's female agriculture students were more than the numbers of their peers in Afghanistan.

5.1.4.3. Residential place

Residency is the other influential factor of agriculture selection; rural students are expected to choose agriculture faculties more than the urban especially those who live in big and industrial cities, in this study in both countries 33.5% of respondents were from villages while the number of big cities respondents was 10%. The agricultural or non-agricultural situation of residency is also remarkable, regardless of residing in districts or cities, if a residential place is an agricultural place, being center of a province or district the numbers of agriculture faculty selectors differ, as in this study 37% of respondents were urban who selected agriculture faculties but the number of districts' residents who chose agriculture faculties was 18%. These proportions show the above-explained reality (Table 5.4c).

Table 5.4c Agriculture selection based upon residential places

Residential place	Frequency	Percent (%)
Village	129	33.5
District	68	17.7
City	141	36.6
Big City	40	10.4

5.1.5. Agriculture Education System in Turkey versus other Countries

Except for the students of Turkey and Afghanistan, the international participants staying in Turkey from 14 other countries including; Mali, Somalia, Nigeria, Indonesia, Bangladesh, Turkmenistan, Sudan, Kazakhstan, Uganda, Greece, Azerbaijan, Union of Comoros, Togo, and Tunisia were also participated and responded the related questionnaires in this research. The result relevant to this subject expresses that today's Agricultural Education System in Turkey is in a better situation than the above-mentioned countries. Among 36 respondents of those countries, 24 (67%) of them have noticed that Turkey's agriculture education system was better than their countries' agriculture education system, while 6 (17%) of them declared that their countries' system was more influential than Turkey's system. (Table 5.5).

Table 5.5. Comparison of agriculture education between Turkey and 14 other countries

Agriculture education system	%
Turkey's system is more effective	67
The other 14 country's system is more effective	17
Both are similar	14

Besides that, 14% of the participants have explained that the agriculture education system was similar between Turkey and their home countries.

5.1.6. The students' satisfaction in terms of the offering lessons

Around the two countries, the result shows that there was a remarkable difference in offering the agriculture faculties' lessons. That is to say, the students' lesson understanding differs between Turkey and Afghanistan (Table 5.6a). In Turkey, this system is generally being offered in more combination of empirical and theoretical methods than the approaches being carried out in Afghanistan. The Turkish students were more satisfied than the Afghan ones (Table 5.6a).

Table 5.6a. The students' satisfaction based on the approaching lessons

Country	Satisfaction	
	Frequency	Percent
Turkey	44	49%
Afghanistan	110	46%
Total	154	95%

The education and teaching systems are better in Turkey (49%) than in Afghanistan (46%). It points to some developments in the education system of Turkey that Afghanistan is unfortunately far from them and does not have access to, because of not having a stable education system. In the last century, more than ten various kinds of regimes were imposed on the people of Afghanistan that directly have influenced the education system.

5.1.7. Comparing the students' English understanding

Besides professional lessons such as botany, plant breeding, genetics, natural resource economics, etc. agriculture faculty requires an understanding of English at a good or intermediate level. Between Turkey and Afghanistan, it has been clarified that in Afghanistan as a foreign and international language English level of agriculture faculties' students are better and considerable than Turkish agriculture students. However, the possibilities of learning-teaching a foreign language like English is enough in Turkey but most of the students do not give importance and attention to learn it (Table 5.6b). Also, no English lessons on agriculture and no English preparation courses have been in the Turkish faculties of agriculture. In each level of Afghanistan's agriculture student's English understanding, the percentage is further than Turkish agriculture students are. Intermediately, 61% of the students of agriculture faculties in Afghanistan know the English language while this ratio in Turkey was found 41.1%, and in a good level, 21.6% of Afghan students know English while in Turkey its ratio was 10%.

Table 5.6b. Comparing the students' talent based on English understanding variable

Level of English knowing	Turkey	Afghanistan
Good	10.0%	21.6%
Intermediate	41.1%	60.6%
Poor	48.9%	17.8%

5.1.8. Comparing the students' computer using skills

In using computer programs skills generally as it is shown in (Figure 5.1) students of agriculture faculties in Turkey are better than Afghanistan's students are.

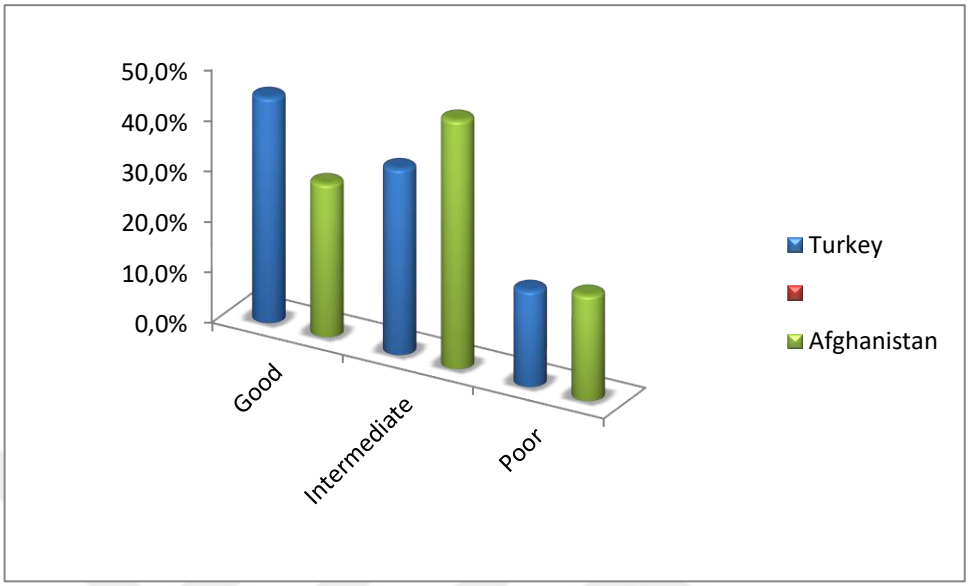

Figure 5.1. Computer programs using skills between Afghanistan's and Turkey's agriculture students

In Afghanistan, 30% while in Turkey 44% of the students' skillfulness on computer programs is at a good level. Also, while about 21% of Afghan students' computer skillfulness is at a poor level their Turkish counterparts' weakness of computer skillfulness is about 19%. Reversely, at the intermediate level, Afghanistan's students' skillfulness is higher than the Turkish ones (Figure 5.1).

5.1.9. Contentment from agriculture schools in Turkey & Afghanistan

Contentment status of the respondents illustrates, is the ongoing systems of agriculture pre-bachelor and high schools' ongoing system responsive to the societies needs or not? around Turkey and Afghanistan specification of agricultural schools, institutes, and faculties convincing degrees are valuable to find the facts relevant to the subject.

Generally, in Turkey, the agriculture schools' ongoing system is in a better situation in terms of education training than in Afghanistan. The students' satisfaction from the ongoing agriculture schools' system in Turkey was 57% that is more than its ratio in Afghanistan (43%). In addition, 5% of the participants in Turkey

responded that they were not satisfied with the current system while in Afghanistan 11% of the respondents expressed that they were dissatisfied with the ongoing agricultural schools' system (Table 5.7b).

Table 5.7. Convincing from agricultural schools

Convincing from agriculture school	Country	
	Turkey	Afghanistan
Satisfied	57%	43%
Little satisfied	5%	3%
No satisfied	5%	11%

5.1.10. Agriculture BSc comparing between Turkey and Afghanistan

The bachelor's degree has almost similar effectiveness aiming to better the agricultural activities of both countries, especially, to solve the ongoing problems of the agriculture sector. Except for the second indicator (see Table 5.8) that its rate in Turkey (38%) is more than in Afghanistan (33%). On the other levels, the agriculture BSc in Afghanistan is in a better situation than in Turkey. For example in the first category of valuating (very beneficial), its rate in Turkey was determined 29% and in Afghanistan 46% that shows its more efficiency than Turkey, and in the other levels as well (Table 5.8).

Table 5.8. Agricultural BSc degree effectiveness

Agriculture BSc comparing	Country	
	Turkey	Afghanistan
Very beneficial	29.1%	46.6%
Beneficial	38.4%	33.2%
Medium	19.8%	17.2%
Insufficient	10.5%	.7%
Useless	2.3%	1.9%

5.1.11. Evaluating of AHES in terms of practice

The Mann-Whitney-Test[16] was used to determine today's Agricultural Higher Education System in terms of practice around Turkey and Afghanistan. The

[16] It is a nonparametric "a replaceable test" commonly used instead of an Independent t-test when the observations' distribution is abnormal (Büyüköztürk, 2019) and provides comparing the means

calculated significant value shows between the two countries there is not a meaningful and statistical difference in terms of practical traits of the ongoing Agricultural Higher Education System (AHES) (Table 5.9).

Table 5.9. AHES in Turkey and Afghanistan in terms of practice

Country	Sig.	Mean	Frequency
Turkey	0.69	152.86	86
Afghanistan		157.2	225
Total			311

5.1.12. AHES between Turkey & Afghanistan based on experiments conducting

The students were asked to rate the effectiveness of the empirical lecturing method and most of them perceived that lectures with applications were better than theoretical lectures. So, It can be said that AHES contribute lectures if they are applied with experiments. To specify that, "Is there a statistical difference or not related to the experiencing of the AHES between Turkey and Afghanistan?" based on, the significant value which was found by using Chi-Square the calculated value shows the Agricultural Higher Education Systems in the viewpoint of the experimental aspects statistically do not differ between Turkey and Afghanistan. In another word, performing the agricultural experiences between Turkey and Afghanistan is about at the same level (Table 5.9).

Table 5.9. AHES between Turkey & Afghanistan in terms of experiments performing

Level of consent from experimentations and observations	Turkey		Afghanistan	
	N	%	N	%
Very satisfied	18	22	50	30
Satisfied	35	43	74	44
Little satisfied	28	35	45	27

Sig. =3.88

of two variables to answer this question: Is there a meaningful difference between averages of two variables or not?

5.1.13. Lecturers' behaviors based on nationality, gender, and department

To specify the influence of nationality, gender, and department as independent variables on "satisfaction from lecturers" a dependent variable "Multiple Linear Regression" tests were used in this research (Table 5.10).

In analyzing the partial and mutual relations between dependent and independent variables it was clarified that there was a negative relationship between nationality and "consent from lecturers" (r=-0.082), but when controlling the other variables, the correlation coefficient becomes more concise (r=-0.088). It means when the other influential factors were controlled more specific and neat relation was determined. Between gender and "satisfaction from lecturers" there was a medium negative relation (r=-.069) but when the other factors had been controlled it has become (r=-0.067). Between departments and "satisfaction from lecturers", there was a weak and negative relation (r=-.038). When the other factors have been controlled, it was found (r=-.035). It illustrates the relationship between department and satisfaction from lecturer variables more neatly because the influences of the other factors were not effective and considered constant.

Significant coefficient, frequency (F), Mean Square, df, and Sum of Squares are shown in the below analysis of variance table (ANOVA) (Table 5.10a).

Table 5.10a shows the analysis of variance (ANOVA)

ANOVA				
Sum of Squares	Df	Mean Square	F	Sig.
3.126	3	1.042	1.48	0.22
233.684	332	0.704		

Generally, there is not a simultaneously meaningful and statistical difference in effecting of "nationality, gender and department" related to "satisfaction from lecturers" because R=.115, R^2=.013, and Sig.>.05.

Table 5.10b Relating to "satisfaction from lecturers" the results of "Simple and Partial correlation"

Variable	Simple correlation	Partial correlation
Constant	1	
Nationality	-0.082	-0.09
Gender	-0.069	-0.07
Department	-0.038	-0.03

R= 0.15, R^2= 0.013

5.1.14. AHES's role in Today's agriculture of Turkey and Afghanistan

In today's agriculture sector of both countries, agricultural higher education systems (AHES) contribute an important and key role especially in problem-solving, soil preparation, greenhouse, using new techniques, struggling with insects and diseases, basically packaging sorting of agricultural productions, information technology (IT), etc.

5.1.14.1. AHES's role in agricultural problems-solving

AHES's role in agricultural problems-solving is at a high level in Turkey in the comparison with Afghanistan. Based on the results of this research in Turkey, about 59% of respondents agreed that AHES contributes to solving the related problems while this ratio in Afghanistan was found 26% (Table 5.11a).

Table 5.11a Role of AHES in problem solution

Contribution of AHES in problem-solving	Turkey	Afghanistan
Agree	59%	26%
Undecided	7%	14%
Not agree	2%	3%

The other two options also show a substantial difference in contributing to Agricultural Higher Education System (AHES) on problem-solving. In Turkey, 7% of the respondents were undecided on contributing of AHES to solve the problems while this value in Afghanistan was found two-fold of Turkey's ratio. In Afghanistan, 14% of participants were undecided and 3% did not agree in contributing to the AHES to solve today's problems of agriculture. So, according to the above results, it was clarified that the AHES of Turkey plays a more important role and more contribution in solving today's agriculture problems of Turkey than the ongoing system of Afghanistan.

5.1.14.2. AHES's role based on using new techniques

In this feature, almost AHES contributes to using new techniques at the same level between both countries. In Turkey 25% of participants responded,

"Contributing of AHES in using new techniques is very beneficial" and 47% of participants responded it was beneficial, while in Afghanistan about 50% of respondents agreed that AHES is very beneficial and 30% chose it is beneficial. These answers show a little dissimilarity of the AHES's based on using the new techniques between Turkey and Afghanistan (Table 5.11b).

Table 5.11b Contribution of AHES in terms of applying the new techniques

Contribution of AHES in soil preparation	Country	
	Turkey	Afghanistan
Very beneficial	25.3%	49.8%
Beneficial	47.1%	29.7%
Little beneficial	16.1%	10.0%
Less beneficial	5.7%	6.3%
Useless	1.1%	2.1%
No education	4.6%	2.1%

5.1.14.3. AHES's role in diseases controlling

In Afghanistan, generally contributing of AHES in struggling against diseases and insects according to the results of this research is convincing. About half of the participants (119 of 239 individuals) have evaluated that it was very beneficial, 71 of 239 (30%) of participants responded that it was beneficial, 10% little beneficial, and 6% less beneficial. In Turkey, 25% (22 of 87 participants) expressed that AHES contribution in diseases and insects control is "very beneficial", 47% "beneficial", 16% "little beneficial" and 8% responded contribution of AHES in diseases & insects control is "less beneficial" (Table 5.11d).

Table 5.11d Contribution of AHES in diseases and insects control

Contribution of AHES in diseases and insects control	Turkey (N=87)		Afghanistan (N=239)	
	Frequency	Percentage	Frequency	Percentage
Very beneficial	22	25.3	119	49.8
Beneficial	41	47.1	71	29.7
Little beneficial	14	16.1	24	10.0
Less beneficial	5	5.7	15	6.3
Useless	1	1.1	5	2.1
No education	4	4.6	5	2.1

5.1.14.4. AHES's role in terms of packaging sorting

In packaging and sorting, the contribution degree of AHES is different around Afghanistan and Turkey based on the diverse applied measurements. The value of response related to the first option "very beneficial" in Afghanistan was 39% (96 of 246 respondents selected), but in Turkey, it was 16%, value related to the second option "beneficial" in Turkey it was about 45%, and in Afghanistan 35%. As these options, comparing the remained options reflect being a little difference in AHES contribution between Afghanistan and Turkey (Table 5.11c).

Table 5.11c Contribution of AHES in packaging sorting

Contribution of AHES in packaging-sorting	Turkey (N=87)		Afghanistan (N=239)	
	Frequency	Percentage	Frequency	Percentage
Very beneficial	14	16.1	96	40.2
Beneficial	39	44.8	83	34.7
Little beneficial	24	27.6	39	16.3
Less beneficial	6	6.9	16	6.7
Useless	0	0.0	5	2.1
No education	4	4.6	6	2.5

5.1.15. The textbooks helpfulness and lecturers teaching methods

The result of analyzed data shows that textbooks are commonly more helpful in Afghanistan than in Turkey. The main reason is not the accessibility of Afghanistan's students to the new means of education like; internet, soft materials, entering electronic libraries, etc. in Afghanistan 36% of respondents answered that it was "very beneficial" the relevant response in Turkey was 9.5%. In Afghanistan, 39% of participants evaluated that it was "beneficial" while in Turkey this ratio was 36%. Comparing the lecturers' teaching method including all departments shows students in Afghanistan have more consent from lecturers of agriculture faculties than Turkey's students are. While in Afghanistan 22% of the students were "very satisfied" from agriculture faculties' lecturers, in Turkey this percentage was found 10% (Table 5.12).

Table 5.12. Helpfulness of textbooks and contentment from lecturers' teaching method

Helpfulness of books	Turkey	Afghanistan	Teachers' teaching method	Turkey	Afghanistan
very beneficial	9.5%	36.0%	very satisfied	10.3%	21.9%
Beneficial	35.7%	38.5%	Satisfied	47.1%	46.5%
Medium	36.9%	22.6%	little satisfied	40.2%	22.3%
insufficient	14.3%	2.5%	less satisfied	2.3%	5.4%
Useless	0.0%	.4%	no satisfied	0.0%	3.8%
no book	3.6%	0.0%			

5.1.16. AHES based on the research areas in Turkey and Afghanistan

Around Turkey and Afghanistan, there is a noticeable difference in terms of the researchable areas of AHES in each level as it is shown in (Figure 5.2). Commonly, in Afghanistan, the researchable areas allocated to Agriculture Higher Education is more than its accessibility in Turkey.

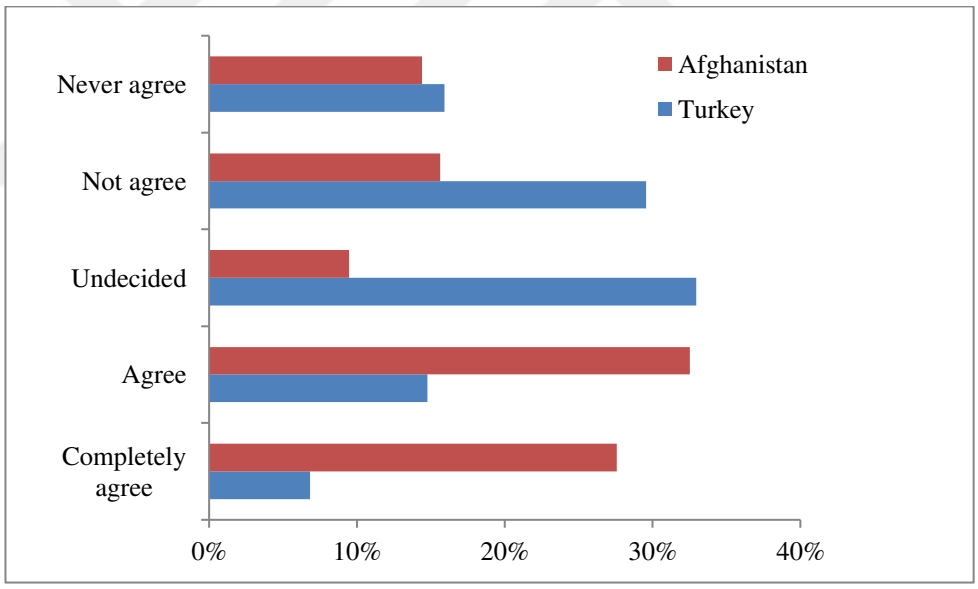

Figure 5.2. Existing of the research areas in the AHES of Turkey and Afghanistan

(Figure 5.2) while in Afghanistan, about 30% of the participants completely agreed on the accessibility of researchable areas the same indexing value related to Turkish participants was less than 10%. In Afghanistan, more than 30% of the respondents agreed on the accessibility of researchable areas but in Turkey, less than 20% of the respondents agreed. In Turkey, more than 30% of the participants not

agreed with having a researchable area while in Afghanistan, less than 20% were not agreed. Also, 16% of the respondents in Turkey chose the "never agree" option while in Afghanistan 14% of the research participants chose that.

Geographical and climatic differences around the two countries are the main reasons causing differing the Agricultural Higher Education Systems of them. While Turkey's most zones have a rainy climate. Oppositely, Afghanistan as a country surrounded by droughts on four sides typically does not have a proportional moisture. In addition, in Afghanistan, generally, agriculture education including school and higher education levels has been improving since 2001 while in Turkey, the cornerstone of the ongoing system was put 100 years ago and gradually is being continued. Therefore, in many aspects as mentioned earlier differences were defined.

5.2. Discussions

The used theory, methodology, and current issues of the field require a discussion to specify their contributions and implications.

Because of being a qualitative kind of research the most appropriate theory used in this research was Grounded Theory that all steps were conducted from the first to the end of this research including research problem and question determining, data collection, data coding, and analyzing, and theory development to reach the saturation point. All the mentioned steps were remarked in this study.

The methodology of carrying out this research mostly relied on getting the primary data via questionnaire. Therefore, a purposive sampling method was applied around both countries. Not only the data were compiled by questionnaire accommodating but also the archival resources and so on were also used to generalize and get the best result in this research.

Results of the study show that the current Agricultural Higher Education Systems in Turkey and Afghanistan in the comparison with most countries of the EU and USA are not responsive and do not have a convincing situation. There are many reasons that have been causing such a situation. For instance, not having a long educational development background, materialistically depending on the EU and

USA's curricula and many other educational necessities especially, in Afghanistan, continuously changing the curriculums due to the governmental systems changing, etc.

In Turkey, the ongoing Agricultural Higher Education System's implication and contribution are in a better manner in the comparison with Afghanistan. Although, the agriculture engaging population percentage in Afghanistan is more than in Turkey, but they could not fulfill and provide the country's agricultural product's needs. The main reason for such a situation is conducting the traditional agricultural activities around the country and the constraints that prevent the rapidly extending of the new methods practicing in both agricultural education systems and the fulfillment of the experimental projects of the Ministry of Agriculture.

Furthermore, in this research, a lot of problems especially, the extremely increasing of the covet-19 virus, being too far geographical locations of Turkey and Afghanistan, insecurity situation in Afghanistan, time-limitation, etc. were the major problematic factors during conducting this research. So, fulfilling a face-to-face interview, distributing the whole questionnaires to the students was impossible.

6. CONCLUSIONS AND SUGGESTIONS

6.1. Conclusions

As the main objective of this study was specified to compare the agricultural higher education systems between Turkey and Afghanistan. Based upon the reviewed literature related to the subject, around the globe there have been done somewhat similar scientific researches that in the light of their findings and this study's results, concisely, these points are concluded:

Around the world, there are not the same agricultural higher education systems, and the systems are varying from continent to continent, even from country to country. Although, in the USA, there are different systems including Non-Grant College, Hispanic-Serving College, and Land Grant Colleges of agriculture, the beginning of the agricultural education system was based upon the establishment of the Land-Grant College of agriculture per state, and from 1862 till now this system is the most active, and consequently has been being applied around the US than the other systems. Most importantly, the major concentration of this system is evolving the three main correlative and multilaterally related pillars of agriculture including research, teaching, and extension services.

In the EU, agricultural higher education systems intensively focus on doing research and practically learning the subjects that necessitate practical activities in fields such as environmental protection, disease, and pest control, organic farming, sustainable development, struggling against climate change, and land erosion. The lessons are being offered in a combinational method of class attending, fieldwork, and laboratory participation.

Around Asian countries typically three levels of agricultural education systems are being offered including the primary, intermediate, and higher levels by various administrative systems. Generally, whilst the education system of Turkey is administrating through the Ministry of Education and Higher Education Organization, but in Afghanistan, besides the Ministry of Education, the Ministry of Higher Education is responsible to run the higher education levels in all majors and faculties.

As the similarities of agricultural higher education systems it was concluded that in terms of agriculture education, in Turkey and Afghanistan as the United States of America, most states of the EU's, etc. pre-bachelor and bachelor degrees requisite time is 2 and 4 years respectively.

The response to the basic research questions; “Are there a notable similarity in agricultural higher education systems between Afghanistan and Turkey?, as other countries of the world such as the USA, EU, etc. around Turkey and Afghanistan, there is also a remarkable concernment that why the number of agriculture faculty's applicants is decreasing day by day than other faculties, what is the reason?” The conclusion of this study shows there are many differences. Even in some features, the systems of both countries are not comparable. For instance, while in most agriculture faculties of Turkey the MSc and Ph.D. programs have been actively continued their specialized programs for inside and outside students, reversely in Afghanistan regardless of a handful of universities the majority of them are not offering the MSc and Ph.D. degrees.

Therefore, such a situation requires a discussion on the related hypotheses. Some of the hypotheses were accepted and some others were rejected. For example, the related hypothesis of the question “Are there a notable similarity in agricultural higher education systems between Afghanistan and Turkey? was accepted. It means, no, there is not a noticeable similarity between the agricultural higher education systems of Turkey and Afghanistan. As the reason that why there is not a notable similarity is locating of both countries in the dissimilar geographical zones. Turkey’s system is generally following the ongoing systems of Europe while in Afghanistan although since 2001 the European and the USA systems have been approaching in most parts but could not reach the expected points and the numerous barriers including the serious insecurity prohibit conducting of the new constructional public utilizable projects and amendments in agriculture education as well as other sectors.

In Turkey, the agriculture faculties handle, supervise, and in terms of curricula are wholly responsible for the lower-educational centers like pre-bachelor institutes and agricultural high schools. But in an opposing manner, although in Afghanistan, the number of agricultural high schools and pre-bachelor institutes is more than in Turkey there are not mutual and multilateral academic communications amongst

them. So, such a condition causes continuing the old, inefficient, and unresponsive curricula and methods around the country.

It has been concluded that being agricultural and non-agricultural of the residential places are importantly influential on choosing agriculture regardless of being urban or rural areas. Based on this research results, the number of agriculture students of agricultural residential places was more than the non-agricultural ones, and being the center of a province or district did not affect choosing of the agriculture faculties. As in this research, most of the respondents were urban who have selected agriculture faculties but the number of districts' residents who have chosen agriculture faculties was less than the urban ones and it expresses a difference.

In English and computer skills understanding, around two countries also a noticeable contrast has been concluded. The Afghanistan agriculture faculty students in the “good” and “intermediate” levels have a noticeable higher understanding and realization than the Turkish agriculture faculty students. Contradictorily, in learning computer programs skills the Turkish agriculture students were more skillful and knowing than the Afghanistan students. That is to say, computer skillfulness between the students of both countries is different.

The agriculture engagement in both countries in the comparison with the US shows a noticeable difference. In Turkey and Afghanistan still, a majority of the residents are relying on the agriculture sector to provide their livelihood.

Two of the most variable traits of agricultural higher education systems between Turkey and Afghanistan are the helpfulness of textbooks and contentment from agriculture lecturers. In this study, the conclusion explains that the helpfulness of textbooks based upon the "very beneficial" index is different between the two countries. In Afghanistan, it was determined more helpful than in Turkey. The students' happiness from teachers in Afghanistan based on the "very beneficial" index was threefold further than its ratio in Turkey.

Job opportunity insufficiency was also different between both countries. In Turkey, it was more insufficient than in Afghanistan. The consent of students from the current system of agricultural institutions differs between Turkey and Afghanistan. In Turkey, most of the research participants were satisfied while in Afghanistan, the least of them were satisfied.

In addition to the above differences and dissimilarities, there are some similarities, closeness, and consistency in the ongoing agricultural education systems between Turkey and Afghanistan. In terms of satisfaction from the curriculums and the other learning materials, the approaching system of Agricultural higher education systems between Turkey and Afghanistan, etc., are similar to one another.

Furthermore, the other variables like BSc efficiency, practical education, the accomplishment of experimentations and observations, and gender, around the two countries there have not been found any remarkable differences. In the betterment of agricultural activities, bachelor's degree efficiency has the same rate in both countries. Practical education is also at the same level around the two countries based on the results of the related variable.

The accomplishment of experimentations and observations satisfactoriness of the students around the two countries is similar to each other. Approximately, in both countries in the same rate male and female classes chose this faculty.

From the viewpoint of agriculture academic members; "Lack of parental support, involvement in decision-making, poor student motivation, large class sizes, inadequate time to be prepared, etc." are the main problems that prohibit them to take place and practice their practical subjects as they wish.

Based on the reliability and validity tests results used in this study to specify the consistency and correctness of the study, it is concluded that an average consistency and correctness was considered in the study.

6.2. Suggestions

In order to solve the existing problematic issues, making the recommendations for policymakers and strategy as well to fulfill future researches the following points are suggested:

The annual student exchanging programs should be carried out in Turkey and Afghanistan. Although, in Turkey, there are some students exchanging programs like Erasmus but are not adequate and publicly responsive.

Curricula reviewing especially in Afghanistan is a serious matter that requires to be edited and amended otherwise the future problems will be increased in an uncontrollable manner and policymakers will encounter too many other problems.

Providing persuasive programs and giving priority to them to change the ideas of young generation particularly in the agricultural residencies according to the seasons and cultivating types of agricultural crops.

The conclusions of this study are not sufficient and responsive to future research areas. Many other research areas including which kinds of fertile and productive agricultural products are grown in Turkey and Afghanistan, which of the current crops are in a disadvantage manner, why in Afghanistan the traditional methods of cultivating could not be changed to the modern methods easily, how to make a mutual relationship in terms of education especially in agriculture education systems of Turkey and Afghanistan, etc., are the substantial future research areas need to be taken place by the future researchers.

This study's findings and conclusions will be a contributor and supporter resource for better fulfillment of the above related mentioned research subjects in the future.

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Appendix 1

Some universities of the world, which has agriculture faculty in their formation

Country	University	Country (united States of America)
Australia	University of Adelaide	University of Alaska
	Charles Strut University	University of Arizona
	La Trobe University	University of Arkansas
	University of Sydney	Auburn University
	University of Tasmania	University of Colifornia, Davis
	Univesity of Agriculture	University of Colifornia
Canada	University of Alberta	Colifornia Polytechnich University
	University of British Columbia	Colorado State University
	Universityo of Guelph Ontario	University of Conneticut
	Univesity of Monitoba	Cornol University
	McGill University	University of Delaware
	Nova Scotia Saskatchewan University	University of Floreda
China	Beijing Agricultural University	Florida A&M University
	Anhui Agriculture Academy of Science	University of Georgia
Finland	University of Helsinki	Lowa State University
Hungarian	Godollo University	University of Hawaii
Iceland	RALA Agricultural Research Institute	University of Illionis
Ireland	University Collage Dublin	Louisina State University
Israel	The Hebrew University	Universtiy of Kentucky
Japan	Ehime University	University of Minnesota
	University of Tokyo	Mississipi State University
Holland	Wageningen Agricultural University	University of Missouri
Poland	Academy of Agricultural Szczecin	Montana State University
	Agricultural University of Poznan	University of Maine
	Warsaw Agricultural University	University of New Hampshire
Slovakia	University of Maribor	North Carolina State University
Swedish	Swedish University	North Carolina University
Swiss	Swiss Federal Inst. of Tech. Zurich	North Dakota State University
Taiwan	National Chung Hsing University	Pennsylvania University
	National Taiwan University	Purdue University
Greece	Athenian university	South Dakota State University
Zambia	Universtiy of Zambia	Utah State University
Denmark	Royal university	Washington State University
Afghanistan	Kabul University	Virginia Technichal University
	Qandahar Agriculture University	West Virginia University
England	Aberdeen University	University of Wisconsin
	Cranfield University	University of Wisconsin
	University of Wales	University of Wyoming

Appendix 2

Many key universities with MSc & PhD agriculture majors around the world

Country	University	MSc & Ph.D. education level
United States of America	California Universtiy	MSc majors: Agricultural management Agriculture science Environment and garden plants science Agricultural system management Animal science (Zoology) Field crops Milk products science Soil science Environment conservation and management Bioscience and agriculture engineering Forest and natural sources Ground science Food science Orcharding Nutrition Recreation Park and tourism office Wine and viticulture
United States of America	West Texas A&M University	Agriculture Agriculture/agricultural management economics Agriculture/animal science Agriculture/plant, soil and environment science
Germany	Humbolt Berlin University	Processing and quality management Management of integrated natural resources Agricultural economics Watery products and fishery Rural development between nations
Belgium	University Demons	Biology Biochemistry, Molecules and Cells Biology Organism biology and ecology
Check Republic	University of South Bohemia Ceske Budejovice	Ph.D. levels majors (3years) Practicable landscape ecology Economy of job management Producing of common plants General zoology

		Plant protection Private zoology Animal hygiene and disease protection
Denmark	Arthus University	MSc majors: Molecule nutrition and food technology Bio-system engineering Agricultural biology Agriculture and environment management
Denmark	University of Copenhagen	MSc majors: Clinic feeding Landscape management Veterinary judgeship
Finland	University of Helsınkı	MSc majors: Food science Agriculture and forestry
France	Universite De Perpignan	MSc majors: Soil science and sea atmosphere Electronic, command systems, informatics
Croatia	University of Zagreb	MSc majors: Agricultural management and Rural development Agricultural ecology Plant science Organic agriculture and agro-tourism Vegetal medicine Animal genetic and reforming Garden plants Animal feeding and silage science Landscape architecture Agriculture engineering Meat producing and processing Milk producing and processing Fishery and hunting management
Holland	University of Wageningen	MSc & Ph.D. majors: Agriculture technology and food science Animal science Environment science Plant science Social science
England	University of Reading	MSc Majors: Agriculture and food system Vegetable product

		Farm animals etc.
England	University of Nottingham	MSc & Ph.D. majors Animal science Food science Plant science & producer Feeding Agriculture and environment science
Italy	Perugia University	MSc majors: Agriculture-food, environment and rural area Economy and management Product systems and agriculture-environment science Agriculture-food and environmental resources conservation Food technology and biology Agricultural and environmental biotechnology Animal science Human, food and nutrition science
Italy	University Di Bologna	MSc majors: Agriculture science technology Food science & technology International garden plants Agricultural area, forest & landscape Planning and management
Hungary	Agriculture university of Godollo	MSc majors: Agriculture science Agricultural biotechnology Animal feeding & forage security Vegetable product Wild animal safeguard & management
Poetkiz	Technical university of lisbon	MSc. Majors: Agriculture Animal production engineering Bio-energy systems engineering Environment engineering Food science and engineering Forest and natural resources Functional biology Landscape architecture Practical mathematic for biologic science Natural resource management and keeping Tropic agriculture and sustainable development Viticulture and winegrowing MSc degree in Europe

		Ph.D. majors: Agriculture engineering Agriculture Animal production engineering Biology Climate change and sustainable development Environment engineering Food science and engineering Forestry Landscape architecture Landscape architecture & central ecology Mathematics and statistics Stream restoration and management
Poetkiz	University of Azores	MSc majors; Nature management and safeguarding Animal production Food science Environment education Ph.D. majors: Agriculture Zoology Environment Chemistry Biology
Poetkiz	Polythecnich Institute of Castelo Branco	MSc majors; Enterpreneourship and innovation in food technology Post-graduate diplomas and certificates Food healthy and security
Poetkiz	Instituto Superior Politcnico De Viseu	MSc majors: Food technology and quality Professional technology courses Viticulture and winegrowiıng Geography information system
Poetkiz	Polythecnich İnstitute of Beja	MSc majors: Food engineering Integrated production Technologic professional programs Watery agriculture Olive growing and viticulture Veterinary services Environmental quality Food hygiene and security

		Chemical and microbiological analyzing
China	Huazhong agriculture university	65 MSc majors 106 Ph.D. professional majors
China	Nanjıng Agricultural University	87 MSc majors 54 Ph.D. professional majors
China	Guangxi University	Ph.D. programs: Plant science Animal breeding Plant protection Veterinary judgeship Plant growing and farming Animal reforming Plant pathology Protective veterinary judgeship
India	Kerela Agricultural University etc.	MSc majors: Agronomy Soil science Horticulture Agricultural botany and plant reforming Entomology Plant pathology Field crops Agricultural extension Agricultural economics Agricultural statistics Agricultural engineering Animal production Rural life science Body education etc. Ph.D. majors: Agronomy Soil science Horticulture Agricultural botany and plant reforming Entomology Plant pathology Field crops Agricultural extension etc.
Philippine	Benquet State University	MSc. Majors: Agriculture economics Agronomy Animal science Entomology

		Agricultural extension education Garden plants Plant pathology Rural development
Japan	Kyoto University vs.	MSc. Majors: Agricultural biology Fishery Animal science etc.
Brazilian	University DeSao Paulo	MSc. Majors: Agricultural entomology Agriculture Energy in agriculture Genetic and plant reforming Garden plants Irrigation and drainage Plant conservation Seed production and technology Soil science Vegetable production Biotechnology Food science and engineering Feed and nutrition Genetic Zoology
Israel	University of Jerusalem	MSc. Majors: Nutrition Field crops and vegetable Garden plants Plant protection Water and soil science Agriculture economy and management Genetic and hybridizing Biochemistry and food management Plant science in agriculture Environmental quality and natural resources in agriculture Livestock and veterinary majors

(Arslan, et all, 2011)

Appendix 3

List of agriculture high-schools and institutes in Afghanistan

Province	District	Name of Educational Center	Type
Kabul	Qara-Bagh	Agriculture professional High-School	High-School
Kabul	Paghman	Agriculture professional Institute	Institute
Kabul	Chahar Aasiyab	Agriculture professional Institute	Institute
Kapissa	Mahmud Raqi	Agriculture professional High-School	High-School
Kapissa	Koh Band	Agriculture professional High-School	High-School
Kapissa	Tagab	Agriculture professional High-School	High-School
Parwan	Char-i-Kar	Institute of Agriculture and Veterinary	Institute
Parwan	Sayed Khil	Agriculture professional High-School	High-School
Maydan Wardak	Sayed Aabad	Agriculture professional High-School	High-School
Maydan Wardak	Nurkh	Agriculture professional High-School	High-School
Logar	Pul-i-Alam	Institute of Agriculture and Veterinary	Institute
Logar	Azrah	Agriculture professional High-School	High-School
Ghazni	Ghazni	Institute of Agriculture and Veterinary	Institute
Ghazni	Jaghori	Agriculture professional High-School	High-School
Ghazni	Maqar	Agriculture professional High-School	High-School
Ghazni	Nawa	Agriculture professional High-School	High-School
Ghazni	Andir	Agriculture professional High-School	High-School
Paktiya	Gardiz	Institute of Agriculture and Veterinary	Institute
Paktiya	Semenki	Agriculture professional High-School	High-School
Paktiya	Sayed Karam	Agriculture professional High-School	High-School
Nangarhar	Jalal Aabad	Institute of Agriculture and Veterinary	Institute
Nangarhar	Surkhrod	Agriculture professional High-School	High-School
Nangarhar	Khogyani	Agriculture professional High-School	High-School
Nangarhar	Chaparhar	Agriculture professional Institute	Institute
Nangarhar	Pachnir Wagam	Agriculture professional High-School	High-School
Nangarhar	Rodat	Agriculture professional High-School	High-School
Nangarhar	Shinwar	Agriculture professional High-School	High-School
Nangarhar	Muhmand Dara	Agriculture professional Institute	Institute
Nangarhar	Bati Kot	Agriculture professional High-School	High-School
Nangarhar	Kama	Agriculture professional High-School	High-School
Nangarhar	Dih-i-Bala	Agriculture professional High-School	High-School
Nangarhar	Bihsood	Agriculture professional High-School	High-School
Nangarhar	Kot	Agriculture professional High-School	High-School
Laghman	Mihtar Lam	Agriculture professional High-School	High-School
Laghman	Qurghai	Agriculture professional High-School	High-School
Laghman	Alingar	Agriculture professional High-School	High-School
Laghman	Ali Shing	Agriculture professional High-School	High-School
Kunar	Marwara	Agriculture professional High-School	High-School

Kunar	Dara-i- Pich	Agriculture professional High-School	High-School
Kunar	Khas Kunar	Agriculture professional High-School	High-School
Kunar	Serkani	Agriculture professional High-School	High-School
Badakhshan	Kishim	Agriculture professional Institute	Institute
Badakhshan	Baharak	Agriculture professional Institute	Institute
Badakhshan	Raghustan	Agriculture professional High-School	High-School
Badakhshan	Yawan	Agriculture professional High-School	High-School
Badakhshan	Darim	Agriculture professional High-School	High-School
Takhar	Farkhar	Institute of Agriculture and Veterinary	Institute
Takhar	Rustaq	Agriculture professional High-School	High-School
Takhar	Dasht Qalah	Agriculture professional High-School	High-School
Takhar	Baharak	Agriculture professional High-School	High-School
Baghlan	Dahna-i- Ghori	Agriculture professional High-School	High-School
Baghlan	Nahrin	Agriculture professional High-School	High-School
Baghlan	Baghlan Jadid	Institute of Agriculture and Veterinary	Institute
Kunduz	Kunduz	Institute of Agriculture and Veterinary	Institute
Kunduz	Imam Sahib	Agriculture professional High-School	High-School
Kunduz	Ali Aabad	Agriculture professional High-School	High-School
Samangan	Aybak	Institute of Agriculture and Veterinary	Institute
Samangan	Dara Sof Pain	Agriculture professional High-School	High-School
Samangan	Khuram-u-Sarbagh	Agriculture professional High-School	High-School
Balkh	Mazar-i-Sharif	Agriculture professional Institute	Institute
Balkh	Dowlat Aabad	Agriculture professional High-School	High-School
Balkh	Balkh	Agriculture professional High-School	High-School
Balkh	Sholgara	Agriculture professional High-School	High-School
Balkh	Shiburghan	Institute of Agriculture and Veterinary	Institute
Balkh	Aaqcha	Agriculture professional High-School	High-School
Balkh	Fayz Aabad	Agriculture professional High-School	High-School
Pharyab	Maymana	Agriculture professional Institute	Institute
Pharyab	Almar	Agriculture professional High-School	High-School
Pharyab	Qaysar	Agriculture professional High-School	High-School
Pharyab	Dowlat Aabad	Agriculture professional High-School	High-School
Pharyab	Qurghan	Agriculture professional High-School	High-School
Badghis	Qala-i- Now	Agriculture professional High-School	High-School
Badghis	Qads	Agriculture professional High-School	High-School
Badghis	Murghab	Agriculture professional High-School	High-School
Herat	Herat	Institute of Agriculture and Veterinary	Institute
Herat	Karukh	Agriculture professional High-School	High-School
Farah	Farah	Agriculture professional Institute	Institute
Farah	Bala Blok	Agriculture professional High-School	High-School
Farah	Anar Dara	Agriculture professional High-School	High-School
Farah	Push Koh	Agriculture professional High-School	High-School
Farah	Push Row	Agriculture professional High-School	High-School
Nimroz	Zaranj	Agriculture professional High-School	High-School
Nimroz	Kang	Agriculture professional High-School	High-School

Nimroz	Chakhansoor	Agriculture professional High-School	High-School
Nimroz	Khashrod	Agriculture professional High-School	High-School
Nimroz	Dil Aaram	Agriculture professional High-School	High-School
Helmand	Lashkar Gah	Institute of Agriculture and Veterinary	Institute
Helmand	Nawa	Agriculture professional High-School	High-School
Helmand	Nad Ali	Agriculture professional High-School	High-School
Helmand	Garumsir	Agriculture professional High-School	High-School
Helmand	Sengin	Agriculture professional High-School	High-School
Helmand	Marja	Agriculture professional High-School	High-School
Helmand	Grishk	Agriculture professional High-School	High-School
Kandahar	Daman	Institute of Agriculture and Veterinary	Institute
Kandahar	Arghandab	Agriculture professional High-School	High-School
Kandahar	Maywand	Agriculture professional Institute	Institute
Zabul	Qalat	Institute of Agriculture and Veterinary	Institute
Zabul	Shaho Joy	Agriculture professional High-School	High-School
Zabul	Now Bahar	Agriculture professional High-School	High-School
Aruzgan	Chora	Agriculture professional High-School	High-School
Aruzgan	Dehrawood	Agriculture professional High-School	High-School
Ghor	Choghcharan	Institute of Agriculture and Veterinary	Institute
Ghor	Lal ve Serjangal	Agriculture professional High-School	High-School
Bamyan	Bamyan	Institute of Agriculture and Veterinary	Institute
Bamyan	Yakaolang	Agriculture professional High-School	High-School
Bamyan	Panjab	Agriculture professional Institute	Institute
Paktika	Sharan	Agriculture professional High-School	High-School
Paktika	Sharan	Institute of Agriculture and Veterinary	Institute
Paktika	Argon	Agriculture professional High-School	High-School
Paktika	Yahya Khil	Agriculture professional High-School	High-School
Noristan	Paron	Agriculture professional High-School	High-School
Noristan	Kamdish	Agriculture professional High-School	High-School
Noristan	Nor Gram	Agriculture professional High-School	High-School
Ser-i-Pul	Ser-i-Pul	Institute of Agriculture and Veterinary	Institute
Ser-i-Pul	Sencharak	Agriculture professional High-School	High-School
Khost	Miton	Institute of Agriculture and Veterinary	Institute
Khost	Tanai	Agriculture professional High-School	High-School
Day Kundi	Naili	Agriculture professional Institute	Institute
Day Kundi	Kajran	Agriculture professional High-School	High-School
Day Kundi	Khudair	Agriculture professional High-School	High-School
Day Kundi	Miramor	Agriculture professional High-School	High-School
Kabul	Third subregion	Institute of Agriculture and Veterinary	Institute
Kabul	Seventh subregion	Agricultural Institute of Afghan-Haland	Institute

(TPEO, 2019)

Ethic board decision

ONDOKUZ MAYIS ÜNİVERSİTESİ
SOSYAL VE BEŞERİ BİLİMLER ETİK KURUL KARARLARI

KARAR TARİHİ	TOPLANTI SAYISI	KARAR SAYISI
23.09.2020	8	2020/595

KARAR NO: 2020/595

Üniversitemiz Lisansüstü Eğitim Enstitüsü Yüksek Lisans öğrencisi Sayed Batin ASHKAR' ın Prof. Dr. Kürşat DEMİRYÜREK danışmanlığında "Türkiye ve Afganistan Arasındaki Tarımsal Yüksek Eğitim Sisteminin Karşılaştırılması" isimli Yüksek Lisans Tezine ilişkin Anket çalışmasını içeren 30190 sayılı dilekçesi okunarak görüşüldü.

Üniversitemiz Lisansüstü Eğitim Enstitüsü Yüksek Lisans öğrencisi Sayed Batin ASHKAR' ın Prof. Dr. Kürşat DEMİRYÜREK danışmanlığında "Türkiye ve Afganistan Arasındaki Tarımsal Yüksek Eğitim Sisteminin Karşılaştırılması" isimli Yüksek Lisans Tezine ilişkin Anket çalışmasının kabulüne oy birliği ile karar verildi.

Questionnaire

1. Gender ( ) Male ( ) Female

2. Marital Status: ( ) Married ( ) Single

3. Country ----------

4. Mother's education level; ( ) illiterate ( ) Primary school ( ) Secondary school ( ) High school ( ) bachelor degree ( ) post-graduate

5. Father's education level; ( ) illiterate ( ) Primary school ( ) Secondary school ( ) High school ( ) bachelor degree ( ) post-graduate

6. Father's job? ( ) Farmer ( ) Collectivism ( ) Business ( ) Employee ( ) Free career (lawyer, psychologist, doctor, etc.) ( ) If other, please specify --

7. Mother's job? ( ) Employee ( ) Business ( ) business administration ( ) Officer ( ) House-wife ( ) If other specify ---------

8. Does your family busy with agriculture? ( ) yes ( ) no

9. If your response is yes, define its reason; ----------

10. In your family;

A- Is there anyone graduated from agriculture high school? ( ) yes ( ) no

B- Is there anyone graduated from agriculture institution? ( ) yes ( ) no

C- Is there anyone graduated from agricultural higher education departments? ( ) yes ( ) no

11. Family's residential place? ( ) village ( ) district ( ) City ( ) big city

12. Education level: ( ) Bachelor ( ) Master ( ) Doctorate

13. Whether you are in undergraduate degree, do you want to start graduate/postgraduate degree? ( ) yes ( ) no ( ) undecided ( ) I have no idea

13.1- If your response is yes, define its reason; ----------

14. Are the lessons being offered in your understanding method? ( ) yes ( ) no ( ) partially/relatively ( ) I have no idea

14.1- Whether your answer is ‘’ no’’ do you express its reason?

15. As foreign language in what level is your English understanding? ( ) good ( ) medium ( ) poor

16. In which level is your computer program (word, excel, Ms. Office) using? ( ) good ( ) medium ( ) poor

17. Before starting your bachelor degree;

A- If you have finished agriculture high school what is your contentment status? ( ) too satisfied ( ) satisfied ( ) little satisfied ( ) no-satisfied

B- If you have finished agricultural institute, your satisfaction/contentment status? ( ) too satisfied ( ) satisfied ( ) little satisfied ( ) no-satisfied

18. In which class you are student? ( ) first ( ) second ( ) third ( ) forth

19. Beside your studentship, do you have any other job? ( ) no ( ) yes

19.1- Whether yes, which rather job it is? ----------

20. Whose decision made you chose agriculture faculty? You can choose more-than one option. ( ) myself decision ( ) my family, relatives, friends ( ) teacher’s recommendation ( ) university entrance exam ( ) if other, clarify; ----------

21. Order the following effective factors based on their importance degree when you have selected agriculture faculty (1 the highest and 5 the lowest effective factor). ( ) work warranty ( ) applied education giving ( ) technicians training ( ) certificate giving ( ) being educated in higher level

22. Being students of high agriculture education, in which degree is effective for you in making effort on agriculture? ( ) very beneficial( ) beneficial ( ) medium ( ) insufficient ( ) useless

23. In which degree, agricultural higher education will be helper to find the new job-opportunities? ( ) very beneficial( ) beneficial ( ) medium ( ) insufficient ( ) useless

24. Which of them is your department in agriculture faculty, Ondokuz Mayis University? ( ) agricultural economics ( ) horticulture ( ) animal

husbandry ( ) plant protection ( ) agricultural machinery and technology engineering ( ) agricultural biotechnology ( ) agricultural structures and irrigation ( ) field plants ( ) soil science and plant nutrition

25. From campus education, slowly;

a- Do you participate the transformation idea to online education? ( ) yes ( ) no

b- Whether your answer is "yes / no", do you clarify its reason? ----------

c- Do you participate the transformation idea to workplace education? ( ) yes ( ) no

d- If your response is yes, do you explain its reason? ----------

26. Agricultural higher education system, beside the information and professional skills, has been contributing in getting the following capabilities;

Obtainable abilities	Completely agree	Agree	Undecided	Not agree	Never agree
Critical idea					
Communication					
Problem solving					

27. Agriculture faculty of Ondokuz Mayis University is sufficiently influential on agriculture problem solving in the zone that is established in; ( ) Completely agree ( ) Agree ( ) Undecided ( ) Not agree ( ) Never agree

28. There is no locking of research station for applied lessons. ( ) Completely agree ( ) Agree ( ) Undecided ( ) Not agree ( ) Never agree

29. In agriculture faculty how do you evaluate the education system of the department, which you are in it? You can select more-than one option. ( ) Locking of academic member ( ) academic member is enough ( ) we are practicing the applied lessons based on planned method ( ) we are practicing some parts of the applied lessons

30. How do you evaluate the agricultural higher education system between Turkey and your country? Only the international students have to answer this question. ( ) I am evaluating the Turkish agricultural higher education system more influential than my country's system.
( ) I am evaluating the Turkish agricultural higher education system more

ineffective than my country's system.
( ) I am simulating/likening the Turkish agricultural higher education system to the country's system which I am its citizen.

31. In your opinion, continuing of Turkish agricultural higher education system as the method that has been being continued;
( ) It is being predicted that contributes in developing of agriculture in the future.
( ) It cannot contribute the developing of agriculture in the future.
( ) Its influence is changed based on the climate condition of the region which located in.
( ) I am not considering the agricultural higher education system effective that has been continuing.

32. In agricultural higher education system clarify the reachable subject's beneficial degree

Education issues	Very beneficial	Beneficial	Little beneficial	Less beneficial	Useless	No education
Communication						
Soil preparation						
New technics						
Disease control						
Packaging						
IT						

33. In agricultural higher education system specify your contentment degree from the following applied education method.

Applied education method	Very beneficial	Beneficial	Little beneficial	Less beneficial	Useless	No education
Giving practical education						
Doing observation and experimentation						
Group discussions						

34. In which degree you are satisfied from your-own department's teacher and trainers?

( ) very satisfied ( ) satisfied ( ) little satisfied ( ) less satisfied( ) no satisfied

35. In which degree you are satisfied from other department's teacher and trainers? ( ) very satisfied ( ) satisfied ( ) little satisfied ( ) Less satisfied ( ) No satisfied

36. In which degree the lesson books are helpful for you? ( ) very beneficial ( ) beneficial ( ) medium ( ) insufficient ( ) useless ( ) no book

37. After finishing your education, clarify your expectations according to their importance degree (1 =%100 and 5= %20); ( ) being academic member ( ) working in a better job ( ) working in an assured job ( ) taking high salary ( ) job finding ( ) if other clarify; ----------

38. In your opinion what is the problems related to the agricultural higher education system? Specify as 1 the most important and 5 the most unimportant problem; ( ) Curriculum ( ) job health ( ) job security ( ) education books ( ) working conditions ( ) if other clarify; ----------

39. How do you predict job opportunities finding in agriculture sector? ( ) job opportunities finding is insufficient ( ) job opportunities finding is sufficient ( ) As soon as graduation the private and public organizations provide job opportunities ( ) Due to being more graduated agriculture engineers, job opportunities are too few ( ) if other clarify; ----------

40. When you graduate in which of these sectors will work? You can select more than one option ( ) our own field ( ) working via collaborating with my other counterparts ( ) in the ministry of agriculture and forestry ( ) being academic member in myself department

41. Whether you have graduated, how is your functional situation? ( ) I am unemployed ( ) I am working in public organization ( ) I am working in private company ( ) I am working out-of my major ( ) if other clarify; ---------

42. In your opinion, in today's applied agricultural higher education system what should be done for solving the existing problems?