Webology (ISSN: 1735-188X)
Volume 19, Number 3, 2022

Analytical Study Of The Historical Contribution Of Muslims In Botanical And Agricultural Sciences

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Abstract

Due to the fascinating his of the Muslim's contribution to the present day regarding science and technology is the exploration and the missing account of the glorious past of the Muslims. Islam opened a new epoch for the history among the Arabs. Muslims became the ruler of Arabian Peninsula to Spain in west and China in the east. During their advancement they emphasized on scientific knowledge. With the creation of the universe, the evolution of humanity began and from time immemorial, the pursuit of livelihood led man to various incentives for employment, as a result of which man became active for his own well-being. An important aspect of human endeavor is agriculture, trees, plants, fruits and vegetables. While irrigation is also very important component of crops and gardens. If we look to this field, it is clear that Muslims also paid special attention to this area of life. This paper primarily deals the contribution of Muslims in the field of agriculture and related productions not only but also informed the land reforms, well and canal system. But there is a common perception that Muslims had no role in this discipline and they were illiterate and non-agrarian. Usually it is thought in colonial regime that Muslims were behind the other nations in this field especially the western researchers and their thoughts are totally different against the Muslims contribution which they had been playing from the early days to their climax. They did not only confine to their religious studies but they incorporated their contribution in agriculture. They are recognized as the founder of agriculture, horticulture and different crops. Like other branches of science, Muslim scientists played a vital role in botany and horticulture and promoted irrigation systems along with agriculture in agriculture. This research

paper illustrates the role of Muslims and highlights the contribution of Muslims in this field not only but its impact on the western nations.

Keywords: Muslims, Contribution, Botanical, Horticulture, Agriculture, Irrigation.

Introduction

If we look at the role of Muslims in the field of botany and agriculture, it is clear that the role of Muslims in the conquered areas was very important in this regard. He laid the foundation for the development of agriculture and plants on the modern principles that the world is adopting today in the 21st century. In this context, for development, the Muslims laid such an excellent network of canals that laws were enacted to provide fair water to the farmers irrigated by several thousand acres of barren canals. The canal gates remained closed until the land needed to be irrigated. Water is needed only in special seasons. "Muslims used to cultivate in a scientific way and had an excellent irrigation system[1]. They knew the value and status of fertilizers and grew crops keeping in view the data of the soil. He studied the best time, he also improved the seed through transplantation. He knew eight ways to transplant. In all the big cities and towns there were agricultural madrassas where the information obtained was passed on to the farmers. Biologists and botanists were aware of the harmful effects of sun exposure on small plants and how to protect fruits from harmful pests. Thatcher and civilian Muslim agriculturists are being praised.[2]

The Muslims did a great job in gardening. They knew how to transplant, and they knew how to grow new varieties of flowers and fruits. He began to cultivate as many trees and plants in the East as he did in the West, and wrote scientific pamphlets on agriculture. ” For a long time, the olive oil industry continued to flourish here. Muslims focused not only on growing plants but also on growing new plants and raising cattle, sheep, goats and horses side by side. We are indebted to them for such a great commodity as rice, sugar and cotton, as we have just seen. He planted all the fruits of the garden as well as spinach and saffron, such less important plants. Spain is grateful to them for producing the silk.3 Planting trees is a prophetic tradition، in Islam, planting a tree is called charity and its reward is for every person who plants a tree. Muslim contributed in this field with great intention when they reached in different areas of the world. Therefore, Muslims are also considered the great patronage and custodians of agriculture and plants in their entire history and the promoted agriculture and horticulture since 8th Century, Plantation is also considered a religious obligation as the prophet advised grow a tree on land is like to construct a house in paradise.4 .Therefore, agriculture and plants are very important for food in human life. The Muslims paid special attention to it after their various conquests on these include commodities, fruits, etc. This research paper is an attempt to highlight the significant role of Muslims that they played in the field of Botanical and Agricultural Science.5

Then there was a system according to which the excess water would be returned to the main canal and used at another time. In Marola, a long, thirty-foot-long waterway was built underground to irrigate the Agricultural field. A thousand years later, the building is still in good condition. Early Muslim farmers understood the importance of fertilizer and used to fertilize the land extensively.[6]

Abdul-Rahman ordered a regular medical study of plants in 771 AD and for this purpose established an experimental garden consisting of different types of plants. Similarly, the Hadiqa flora of Cordoba was a link in the same chain. He explored the seeds of various mountain plants and herbs and planted them in every major city in a garden style unparalleled in the world.[7]

Research Methodology

The topic is related to the qualitative method of research deals with the historical knowledge as the Muslim contribution in the field of Botanical and Agricultural Sciences therefore historic method of research has used with the help of documentary sources i.e. books, articles, essays etc.

Review of Literature

As very important component of research, most relevant literature has been concerned to compile this research paper including primary and secondary books i.e. Quran, Hadeith, History of Science, The Scientific Outlook, Muslims Economic System, Islam and Evolution of Science, , A Short History of Science, Introduction to the History of Science, Musilman Sainsdan,

Discussion on Topic

Although work on irrigation, along with agriculture and farming, began in the early days of Islam, it was achieved during the reign of Fauq-e- Azam (R.A). Similarly, work on botany and agriculture continued in the Umayyad period but it flourished in the golden age of the Abbasids. Then the Muslims laid the foundation for the digging of canals, the distribution of clean water, and the encouragement of farmers to cultivate in a new way. The lamp of knowledge began to shine in Europe through Andalusia. As we know Islam is a religion of human welfare therefore, it emphasized on every aspect of human welfare and concerned to mankind in the entire world. Agriculture and plants have an important place in human history. It was declared by the creator of the universe as an important component of human food. That's for the welfare of man I have created lush fields. Then grow crops in these fields, and then let these crops ripen and turn golden and produce grains from them that they eat. I used rainwater to irrigate these fields. Because without it, the growth of these crops would not have been possible. Thus, the development of agriculture was made possible by the development of irrigation and efficient systems. That is why during their heyday, the Muslims started the process of promoting land settlement and established the irrigation system and made agriculture and gardens the focus of their attention.[8] Muslims believed that God was the creator of everything. As stated in the Holy Qur'an. We revived the dead land and made from it grains that you eat, and made from it date palms and vineyards so that you may eat its fruit. We have made springs of water for you.[9]

On another occasion, Allah says that it is Allah Who sent down water from the sky upon you through clouds. And then through the same water He created all kinds of plants. And produce grapes, pomegranates, olives and palm trees. Many of the genes are the same and many are different from each other.[10] The well-known Orientalist Montgomery Watt said, "when the fortunes of Muslims were at their peak, their teachings attracted students of all faiths. The Jews of

Spain were particularly influenced by Arab thought, and most of them including the great Mimonides, studied with Arabic-speaking teachers and wrote books in Arabic".[11]

In the field of natural history especially Botany pure and applied Arabs contributed more than all other nations. They informed about the difference of plants as palms and hemps. Thee classified plants into those which are grow from cutting, grow through seeds and those grow spontaneously.12 Muslims started to contribute in this field of Science and they worked in agriculture and horticulture with the advent of Islam in Madina. During the period of Ummiad and Abbasid caliphate، Islam reached in the entire Middle East and the Muslims focused for livelihood on agriculture. Since planting trees was declared a charity in Islam, the Arabs promoted fruit gardening by planting fruit trees and cultivating fruit trees as human food. Thus the fruit trade became an important occupation in Arabia. Since planting trees was declared a charity in Islam, the Arabs promoted fruit gardening by planting fruit trees and cultivating fruit trees as human food. Thus the fruit trade became an important occupation in Arabia.13

Similarly, when the Muslims conquered Andalusia, they also began to pay attention to the botany in Andalusia, and at the same time began to pay attention to the botany in their early days. Research on medicinal plants was an important factor in the development of medicine. In this context, Abdul-Rahman I set up an agricultural research farm in the famous city of Cordoba called Hadiqa Botanical Medicine, where physicians and botanists were asked to conduct research on the properties of plants, their growth and effects. Opportunities were provided. Abdul Rahman I, the ruler of Andalusia, took special interest in the patronage of botany and imported seeds and cuttings of plants and trees that were not available in Andalusia from distant lands. For this purpose, he sent a team of experts to different countries to bring plants from there and grow them in Andalusia. Similarly, he sent official delegations not only to the continent of Africa but also to most of the Asian countries which are rare. Helped in the search and production of plants, trees and herbs.[14] Medicinal herbs were grown all over Andalusia, near Guadix Valley, Almeria and Granada, near Mulhacen. Fragrant herbs were also abundant. Saffron was introduced to Andalusia by Muslim botanists. Toledo, Velencia, Beyasa and Hijara Valley were famous for saffron production. Thanks to the hard work of Muslim botanists, saffron began to grow in Spain in such abundance that it was exported to neighboring countries. Similarly, the production of violet was also significant. The greatest achievement of the Andalusian botanists was that they were able to accurately observe the sex differences in plants through years of research. Muslim botanists began to experiment not only with medicinal plants but also with all kinds of grains and cash crops. He also improved the irrigation system and dug canals for the development of agriculture. Most of the country was better irrigated by rivers and canals. As a result of this effort, the whole country became full of crops and the whole year was full of all kinds of crops, greenery was seen everywhere. Even the areas up to the mountains were not allowed to remain barren. Grapes were often grown in mountainous areas. In addition, lemons, guavas, apples, figs, olives, almonds, almonds, bananas, peaches, grapefruits, melons, pomegranates, sugarcane, wheat, barley, gram, millet, maize and rice were widely grown throughout the country. And most of these commodities were exported abroad to earn significant foreign exchange.[15]

The Ash Valley (Guadix) and Seville would produce high quality cotton, which was introduced to Spain by Muslim botanists. Cotton is called Qutn in Arabic. The word came to be called Alagodon in Spanish and cotton in English. The investigation of Andalusia Muslims also gave rise to a very high fiber of 'Puttsun', which was used to make good quality threads and good quality paper. It was customary to make lawns outside the houses and plant rare trees in them from distant lands. Fountains and pools were also made in most of the houses. In most places on the south coast of the country, the sugarcane crop was excellent, producing high quality sugar.

In all the major cities, the Muslims cut off several canals to supply water to every Garden, Abdul Rahman-I, most of the cities along the canal or River. He built a magnificent palace outside Granada and planted a large garden around it, which he named Risafa. Abdul-Rahman-I planted a palm tree in the garden at the foot of the palace from his native Damascus. Muslim rulers also introduced many new fruit trees from the Arab region to Spain and planted their gardens in succession. Remains of some of these gardens still exist.[16]

The city of Almeria on the southern coast of Spain was the largest city in the production of Dibaj, with more than 4,500 textile machines installed. Tourists and historians of the time highly praised the high texture of Al-Maria's Dibaj. Extensive cotton cultivation was well organized and botanists experimented with high quality cotton, which led to the rise of Spanish textile technology. Cotton was in India and ancient Egypt but it became an important textile only after the advent of Islam. Indeed, one of the results of the Muslim agricultural revolution was that cotton plantations spread throughout all Islamic lands, in the east as well as the west. Fine cotton was manufactured and exported to various countries, including China and the Far East.[17] If you look at the time of Abdul Rahman III, it was a lover of agriculture. He planted many orchards in his time. During this time many new varieties of crops were also introduced. Introduced irrigation system in hilly areas with grafting of fruit bearing plants. Waterways were built by cutting mountain ranges. As a result, barren and desolate areas also became green. Not only this, at the foot of the mountains, soil was spread and grapes were planted on it. The Islamic world, especially in Andalusia, was rich in orchards and provided employment opportunities. Similarly, there was a line of fruit trees for thirty miles around the Kabir Valley and they had the best arrangement of water supply.[18]

Arab Muslims are also credited with introducing textile technology in Spain. The Muslims started the textile industry there in the second century AH. In France and Germany, however, the industry arrived a long time later in the sixth and eighth centuries AH, respectively. Abu Ubaid al-Bakri, Abu Jafar ibn Muhammad al-Ghafaqi, Ibn-e-Basal, Ibn Hajaj, Sharif Idreesi, Ibn al-Rumiya, Ibn Bakar, Abul-Khair Ashbiliya, Ibn al-Awwam and Ibn-al-Baittar were prominent botanists of the Islamic period in Andalusia. He not only loaded Andalusia with plants, trees and crops through his research but also took good care of their protection, so Ibn al-Awwam wrote in Kitab al-Falaha many ways to preserve fruits and grains for a long time mentioned. He has also written some of the methods by which wheat was kept from spoiling for twenty years. Therefore, large warehouses were set up by the government according to the methods prescribed by those experts in which grain and grain were stored for years.

Abdul Latif Baghdadi

Abu Muhammad Abdul Latif Bin Yousaf was born in 1162 AD at Baghdad. Basically he was an expert in Physics. In 1186 he went to Bait ul Maqdas and then traveled to Egypt. He stayed at Jamia-tul-Azhar. He learnt skills of agriculture there and became a prominent expert of agriculture of the time and wrote of famous book Al-Afadah Wal Aitbar Fi-Amoor-ul-Mushahida Wal-Hars-ul-Maniah

Zia-u-Din Ibn-ul-Baittar

He was a famous scientist and Botanist of Islamic era in Andalusia.[19] Zia-ud-Din Abu Muhammad Abu Abdullah was born at the city of Malaga Spain in 1197 and he was considered the important Muslim Botanist of his era. He was the disciple of famous Botanist Abul Abbas of Spain. He visited to different countries and collected information about herbs and plants. In 1219 he went to Africa and after five years he reached at Egypt. He served Sultan Al-Kamil and on his death he went to Damascus and remained with Sultan Al-Salih. He was well known how to prepare medicine from herbs and had a deep study regarding herbs. He wrote his famous book Kitab Jami-ul-Adwiya. The Latin version of Ibn-e-Battiar's book continued to be published until the eighteenth century. He also wrote many other books on herbs and diseases which can be cured through herbs as Kitab-ul-Abana-wal-Aalam, Kitab-ul-Afaal, Sharah Aladviya. He died at Damascus in 1248 AD.

Abul Abbas Ahmad Bin Muhammad Al-Romiyah

Ahmed ibn Muhammad, the famous Ibn Rumiya, was born in Seville. His surname was Abu al-Abbas. He described the medicines made from plants and their properties. And he wrote his book "Kitab al-Rahla" (كتاب الرحلة) on it. The Romans identified plants, especially herbs, growing around North Africa, Egypt, Syria, Iraq, the Hejaz, and the Mediterranean and the Red Sea. Most of them were unknown. He started making medicines from many herbs. His other books include Al-fed Medicine, Galen's Medicine, and Al-Mustadrakah. He died in 1229 A.D.

Abu Ubaid Al--Bakri

Working on botany, one of the best names is Abu Ubaid Abdullah bin Abul Aziz Al Bakri was born in 1014 in the famous city of Cordoba. He was an expert in botany. He compiled a list of all the plants, trees and crops in Andalusia, performing the most important work in the field of botany. He explained his name, condition and characteristics with detail. Later, he wrote his research in book form and named it Kitab-e-Ayan-e-Nabat wa-Shajrat-e-Andalusiya. This book has been studied in Europe for centuries. And Europeans used it as a document. Al-Bakri died in 1094.

Yousaf Bin Ishaq

One of the great scientists working in botany is Yusuf ibn Ishaq ibn Baklarish, who was born in the eleventh century. His main work is research on herbs. This book is also called Mustaini because of the fact that it is attributed to the ruler of Andalusia. Similarly, Bucklarish also conducted several

experiments on agriculture and clarified the quality of cultivation, environment and methods of irrigation.

Abu Jaffer Bin Muhammad

Abu Jaffer Ahmad Bin Muhammad was the first Botanist who early worked on trees in Spain. At first he proposed the few names of trees in Spain. Later on he also collected the trees in Spain and Africa. With this he suggested the Arabic, African and Latin names of these trees which were unknown for the people of that time. After that he wrote a book on trees and one of his most famous books about trees is Al-Adwiya Al-Mufrida.[20]

Muhammad Sharif Idreesi

Another great name in botany is Muhammad ibn Sharif al-Idreesi and he was from Andalusia. He was born in 1100 AD and studied in Cordoba. Idreesi became famous for his service at the court of King Idrees. Idreesi was an expert in Botany and Zoology and rendered valuable services in this field. He drew maps of the earth and wrote the book Nazhat al-Mushtaq fi Ikhtaraq al-Afaq, a book on geography, which has a certificate in botany along with geography. After that, he published another book on botany, Rawad-al-Anf fi Nazhata al-Nafs. These books were considered as guides by European Scientists. Idreesi Died at Cordova in 1166 A.D..

Ibn-ul-Awwam

Abu Zakariya Muhammad Bin Ahmad is the first Muslim Scientist of Ashbiliya Spain during medieval period that was expert in the field of Botanical Sciences Agricultural Sciences. He worked and research on trees and plants. He wrote his famous research based book Kitab-ul-Flahatah. It was his brief book on botanical sciences. This book is considered the most excellent book in the entire Islamic world on this topic. Ibn-ul-Awwam clearly discussed the issues, diseases and cures of trees and plants not only but also provided information about agriculture, cattle, poultry, trees plantation with their diseases and cure too. He died in 1190 A.D. Ibn-e-Awwam had unique credit that he identified 1600 herbs which can be used as cure.[21]

The Arabs developed agriculture and horticulture to such an extent that it became a complete science and art. The Arabs were aware of every fruit tree, and every kind of fruit, and they made the deserts green.[22]

Abu Abdullah Muhammad Ibn-e-Basal

Abu Abdullah Muhammad ibn Ibrahim was the most authoritative expert in agriculture. Who based his knowledge on experience? He visited different countries and wrote the book Al-Falahath. He explained the variety of soil and water and its impacts on crops first of all. He farmed and planted a garden for experimental study. After a successful experiment, Sultan Muttamad encouraged him and commissioned him to plant gardens. Died in 1091

Abu Abdullah Al-Thaghzi

He was the most important scientist of agriculture and have a great expertise in different crops. He worked on agriculture and wrote a book Zahar-ul-Banan wa Nuzhat-ul-Azhan He divided the book into twenty-six chapters. Including soil structure, arable land, growing crops, crop types, production, production rules and regulations, commodity production, their storage, plant care, plant health and growth, fruits introduced the golden principles of protecting vine plants and protecting them from the effects of the weather.

Conclusion

The discussion is concluded with this theme that the Muslims were the pioneer in the field of botanical and agricultural sciences. They worked and created awareness in botanical and agricultural sciences with their victories in different regions. In this field of the credit goes to the Muslims as the founder of different work on botanical and horticultural perspective as they started to cultivate crops and grow plants in Arabia, Iraq, Egypt and Andalusia. With the advent of Islam in different areas Muslims paid especial attention on cultivation of food crops and horticulture. Muslims scientists focused on different types of plants and introduced variety of the plants which were unknown for the western and other nations. The Muslims worked on this field during the Abbasid era and converted it into peak during their rule in Spain. Abdul Rahman-I, Motamid and Mustaeen played in vital role in the uplift of agriculture, horticulture and plants. Muslims Scientist also worked day and night and they contributed through their experimental knowledge to the entire world. We summed up the discussion with the words said by Hitti, “it was the work and contribution of Muslims that we have become successful in Europe. Muslims introduced the new techniques and skills of cultivation, they set new concept of irrigation, the built canal with storage capacity. Worked on new plants, trees, herbs and crops. They got excel on the other nations.

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