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SERICULTURE IN PROVINCES OF BURSA, AMASYA AND MUGLA (TURKEY)

SUMMARY

Bursa was the important city where silkworm egg and cocoon were produced; silk and velvet were woven by hand and exported to the Europe in the period of Ottoman Empire. Since silkworm was brought to Anatolia, Bursa sustains its importance in this sector. Sericulture has begun at the same period in Amasya that is one of the Ottoman cities. Silks came from Iran were woven in this city because of being on Iran's trade route. The fabrics woven in Amasya were preferred by Ottoman Palace and also exported to the other countries. Sericulture and cocoon cultivating were made in Mugla the city has eligible climate condition to cultivate mulberry. Silk was woven by using simple bench as a family work. Bursa became rapidly an industrial city on silk texture because of having raw material by beginning of republic period. Silk texture has subsisted as a traditional Turkish handcraft at Amasya and Mugla.

Keywords: Bombyx mori, native breed, genetic resource, Silk Road, cocoon

INTRODUCTION

Some animal species and breeds had important place in history of some countries such as Merino sheep in Spain, Angora Goat in Turkey and sericulture in China (Ertugrul et al., 2010). Sericulture in the World is generally made in Asian countries. In the World production percentages of China and India are 80% and 15% respectively (Kaya and Tutkun, 2012). The production of fresh cocoon is about 134 in 2012 (Table 1). Silk has some unique characteristics in kinds of fabric. It is shiny, soft, strong, and has a fabric can be dyed. It is so sensitive, therefore it is effected by noise, smell, wind, temperature change, even carers hygiene (Imer, 2005). Generally four kinds of silkworm which are Mulberry, Eri, Tasar and Muga are reared in the World. Mulberry silkworm (*Bombyx mori*) (Table 2) has the majority in them which percentage is about 95% (Akbay,

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1981). In Turkish society silkworm seem cute. A survey study was realized in primary school students. According to study between 9 and 40% of students in different levels rear insects. Students rear silkworm, ant, ladybug and grasshopper which showed that silkworm was one the loveable insect in insect groups (Tezcan et al., 2010).

Table 1. Production of apiculture and sericulture (Anon 2010, 2013).

Year	Number of Villages Engaged in Sericulture	Number of Families Engaged in Sericulture	Number of Egg Boxes Produced	Production of Fresh Cocoons (tonnes)
1936	2.201	49.338	56.278	2.135
1940	2.422	63.498	73.045	3.014
1950	3.013	69.354	62.927	2.501
1960	2.530	60.370	50.865	2.444
1970	1.559	43.589	64.340	1.461
1980	1.601	43.025	66.042	1.707
1990	1.916	44.541	80.544	2.171
2000	230	2.210	3.147	60
2012	342	2.572	5.576	134

Table 2. Scientific classification of the silkworm (Akbay, 1981).

Phyluym	Artropoda
Class	Insecta/Hexapoda
Ordo	Lepidoptera
Subordo	Macro Lepidoptera-Heterocera
Super Family	Bomycoiden
Family	Bomycidae
Genus	Bombyx
Species	B. mori

Sericulture in Bursa

Importance of Bursa in sericulture happened in 14th century during Ottoman Empire (Ergenc, 2013; Ersevenc, 2013; Inalcik, 2013, Kirayoglu, 2013a; Peker, 2013) but before there was a weaving industry before Bursa conquered in 1326 by Ottomans (Tas, 2013). The second important bazaar of floss silk trade was in Aleppo apart from Bursa. Persian merchants brought floss silk to Bursa and bought woollen from Europe, pearl from Persian Gulf, sugar from Egypt and Cyprus, and even spices from India. Even in 16th century Persian merchants used to sell floss silk in Bursa and bought tin, woollen and spices. Florence silk market used to decide prices depending on Bursa silk market (Ersevenc, 2013; Gunay, 2013; Inalcik, 2013). Schiltberger, Clavijo, Pero Tafur, and B. De le Broquiere reported that Bursa was one the most important floss silk bazaar in the World.

Table 3. Travellers, writer, scientist and tourist visitors to Bursa and arrival dates (Ceyhan 2013)

Name	Year of arrival	Name	Year of arrival
Ibni Batuta	1333	George Keppel	1830
Johann Hans Schiltberger	1397	Charles Texier	1833
Bertrandon de La Broquiere	1432	Richard Burgess	1834
Pero Tafur	1437	Duc de Raguse	1834
Benedetto Dei	1470	Charles Greenstreet Addison	1835
Bonsignore Bonsignore	1498	Aucher-Eloy	1835
Bernardo Michelozzi	1498	William J. Hamilton	1935
Arnold von Harf	1496	Julia Pardoe	1836
Maringhi of Medici	Early 16 th century	Robert Walsh	1836
Pierre Belon	1546	Edmund Spencer	1836
Hans Dernschwam	1555	M. Baptistin Poujoulat	1837
Stephan Gerlach	1576	Eliza C. A. Schneider	1830-1840
John Newberie	1581	Serafeddin Magmumi	1894
George Chritoph Fedrenberger	1588	Hayrullah İbni Abdulhak	1844, 1851, 1863
Reinhold Lubenau	1588	G. W. Frederick Howard	1853
Vincent Stochove	1630	Lean Henry Abdolone Ubcini	1855
Evliya Celebi	1640	Kevork Keresteciyan	1855
Jean-Baptiste Tavernier	Several times in his life	Sandison	1855
Thevenot	1666	Charles James Monk	1855
Spon	1675	Cyrus Hamlin	1855
Covel	1675	Georges Perrot	1856, 1857
Wheler	1675	Journal de Constantinople	issue of Nov. 1863
Smith	1683	Sir Hubert E. H. Jerningham	1870
Edmund Chishull	at the end of 17 th century	Maling	betw. 1869-1872
Aubry de La Motraye	1701	Georgina Adelaide Muller	1873
Joseph Pitton de Tournefort	1701	Henry C. Barkley	1878
Paul Lucas	1702 and 1705	Nikola Nachov	1879
Richard Pococke	1738	Edmond Duteuple	1880
Carsten Niebuhr	1767	Marie de Launay	1880
Dominique Sestini	1779	Omer Suphi	1889
Andre-Joseph Lafitte-Clave	1786	Ibnulcemal Abdul Tefvik	1890s
Le Chevalier	1786	Clement Imbalt Huart	1891
William Hunter	1792	Mehmet Ziya	1892-1893
Guillaume Antoine Olivier	1790	Fatma Fahrunnisa	1895
Von Ignatz von Brenner	1793	Paul Lindau	1897
James Dallaway	1794	Vasil Kinchev	1899
Antonie Galland	at the beginnig of 18 th century	Osmanzade Huseyin Vassaf	1901
William George Browne	1802	Regis Delbauf	1905
Joseph von Hammer-Purgstall	1804	Richard Davey	1906
Lady Hester Stanhope	1811	Hasan Taib	1907
Christophe Aubin	1812	Paul Fesch	1907
John MacDonald Kinneir	1813 and 1814	P. N. Daskalov	1909
John Fuller	1818	Kethy Brown	1911
Charles MacFarlane	1820s	Andre Gide	1914
Victor Fontainer	1821	Ewald Banse	1918
William Martin Leake	1824	Grace M. Ellison	1924
Joseph-Marie Jouannin	1825	Clare Consuelo Sheridan	1924-1925

After floss silk was imported to Bursa, it was drawn in filature factories and woven textile factories, after than it was exported to Europe (Ergenc, 2013). In history of Bursa lots of travellers, writer, scientist and tourist visited the city and mention about sericulture in Bursa (Table 3). For example Heat Lowry mentioned in his book of 'Seyyahların Gözüyle Bursa' (Bursa from Travellers Eyes) about 60 travellers who visited Bursa. There were some special profession on this sector. 'Hamcılar' used to draw silk fibres from cocoon by using tool of 'mancinik' and after than silk fibres are made silk thread by using tool of 'dolap' (Karaarslan, 2013). Silk thread was dyed by 'boyacılar' and later than dyed silk thread was woven by 'dokumacılar'. (Ergenc, 2013; Oguzoglu, 2013). By depending on their work experience, dokumacılar were into three groups called as 'cirak', 'kalfa', and 'usta'. Cirak which meant apprentice was a beginner. If a cirak works 1001 days in this work, they are promoted as kalfawhich meant headworker. After a kalfa worked several years, he was tested by a commission and became an usta which meant 'master' (Tas, 2013). Women generally used to work in filature factories rather than weaving factories. Girls commonly used to work until they marry to gain dowry money. After girls marry, they leave the job (Akkus, 2013, Soysaldi and Ozdemir, 2013).

The various kinds of woven fabric were named in different names such as 'arsin, dip, seraser, dose melik, carsaflik, cekme, sestari, hakim, keyfiye, ipekli abani, ipek hayten, sacak, serit, oya, puskul, kemha, atlas, kutnu, futa, kadife (velvet), tafta, cifte tafta, yigit tafta, and vale (Oguzoglu, 2013; Turkoz, 2013). Bursa Olgunlasma Enstitüsü (Maturation Institute of Bursa) is established in Bursa in 2007 to educate girls on native cultural items. In the school girls are educated on lots of kinds of woven silk fabric mentioned above (Goral, 2013; Kemankas, 2013) Florentiner Maringhi reported that quality of silk fabric definitely much more better than silk fabric made in China (Turkoz, 2013). In order to obtain different kinds of colours, silk fabric was dyed. There were used plenty of plants to dye fabric. Yellow colour was obtained from 'Altın agac, Katirtirnagi (Spartium - Spartium junceum), sumak (sumac), gence, and safran (saffron)'. Brown colour was obtained from 'mazi' (thuja), 'mese' (oak), 'ceviz ve yapragi' (walnut and walnut leaves). Red was obtained from 'pine bark' and 'kokboya' (madder), green colour from 'yabani nane' (wild mint), blue colour from 'Hint bitkisi', gray colour from sutlegen (spurge, Euphorbia)', black colour from combination of 'karpuz otu' and 'kara dal otu' (Oguzoglu, 2013).

After steam engine invented in Lyon in 1824, a French family, Glaizal Family, built a filature factory in Bursa in 1837 but after for a while this factory went bankrupt (Basaran, 2013; Ciftci, 2013). Austrian consul of Falkheisen bought the factory. He reopened the factory in 1945 together with Tasciyan who was a Ottoman Empire citizen and work in British consulate as a translator. After this filature factory, sericulture industry developed in Bursa region. (Dortok-Abaci, 2006; Cakici, 2013; Ciftci, 2013). For example in 19th century there were 130.000 families who reared silkworm. This number increased to 150.000 families in 1900s. Also about 19.000 employee worked in filature sector and

2.000 employee in textile sector (Altun 2013). Steam engine filature factories used to need high amount of firewood. This firewood was brought from Ulu Mountain which was the nearest mountain in Bursa region via Nilufer River. In late 19th century although firewood requirement was about 15.000 tonnes for filature factories, it was just about 5.000 tonnes for whole Bursa people at homes (Ciftci, 2013).

In Bursa there were lots of specific bazaars or markets depending on goods sold such as Bakircilar Carsisi (for coppersmiths), Oduncular Pazari (for firewood), Yemeniciler Carsisi (for shoes), (Pirinc Han (for rice), Tahlil Han (for grains), and Tuz Han (for salt). Ipek Han (for floss silk), and Koza Han (for cocoon) were two of those specific places (Kirayoglu, 2013a,b)

Sericulture in Amasya

Apart from Bursa, Amasya region is one the most important sericulture centres in Turkey (Kivrim and Elmaci, 2011; Yucekaya, 2013). Amasya is also hometown of Strabon (B.C. 64/63 - A.D. 24) who was a famous historian, geographer and philosopher (Anon 2014). Climate conditions of Amasya is very eligible for sericulture and looks like Bursa climate. On the other hand Amasya had a strategic position on way of Anatolian roads in Ancient time and still has. Amasya was on way of the Silk Road from Iran to Bursa (Gunay, 2013; Kivrim and Elmaci, 2011). There is a village named as Ipek Koy (Silk Village in English) which is 9 km far from Amasya city centre (Kivrim and Elmaci, 2011). It can be said that history of sericulture in Amasya is old as history of sericulture in Ottoman Empire (Yucekaya, 2013). During Ottoman King of Selim I there was a war between Ottomans and Iran. The King Selim I put into action of embargo for silk trade between Ottomans and Iran. During this embargo Amasya was one of the most important sericulture centre for export silk material in Bursa silk market. In different times Amasya sent some sericulture experts to other cities. For example Bor county demanded 8-10 families who were expert on sericulture and Amasya approved this wish. Ispir county demanded some experts for sericulture (Kivrim and Elmaci, 2011). In Amasya there was established a Sericulture Station in 1921 (Colak, 2013).

Sericulture in Mugla

The Province of Mugla is located at southeast of Anatolia. It has a mild climate and eligible for mulberry cultivation and sericulture. Textile industry was based on sericulture and it had important for economy of Mugla. There are made famous 'duven' fabric in Yesilyurt town and Mugla city centre. Sericulture in Mugla is a traditional family business. Mugla region used to be a closed economy because of some deficiencies about transport and geographic conditions. Sericulture is generally made by women, so they invest to buy gold jewelry for theirself income of sericulture. After 1950s, economy of Mugla opened to outer bazaars. People started to deal with different kinds of business, so then sericulture business decreased. In 1970s tobacco cultivation started to be supported by governments and people cut mulberry trees and started to cultivate tobacco like Bursa immigrants who came from Greece in 1924 (Colak, 2013).

CONCLUSIONS

Bursa is regarded as one of big centers in that silk trade an industry in history (Inalcık 2013). Anatolia, especially Busa was an very important station silk road in 15th and 16th century. Silk trade between Europe and Asia was made through Bursa. On that period Bursa became an entrepot city where the silk that came from Iran was weighted, stored and taxed (Sahan 2013). Sericulture in Bursa had big changes in 19th century. Modern catapult texture industry was begun to use instead of classical hand-made texture. Amount of silk product increased significantly by using mechanical industry. By the changes of wold textile industry, mechanized mass production was begun to use instead of hand-made and fine workmanship production. Then, cotton fabrics especially English cotton was begun to use rather than silky fabrics (Altun 2007). On the contrary Bursa was efficient on silk industry in that period when a lot of factory were established, a lot of people studied at new schools and specialized in sericulturing. Bursa has significant role on worldwide textile industry because of having big economical potential of silk texture industry (Altun 2007). However silk texture exists as a Turkish traditional handcraft in Amasya and Mugla.

REFERENCES

- Akbay, R. 1981. Ipekbocegi Yetistirme. Ankara Universitesi, Ziraat Facultesi, Ders Notlari, 54. Ankara.
- Akkus, T. 2013. Bursa Ipekciliginde Gayrimuslimler. Bursa'da Yasam Dergisi, Aralik: 136-147.
- Altun, D. 2007. XIX. Yuzyilda Bursa'da Ipek Bocekligi. Balikesir Universitesi, Fen Edebiyat Fakultesi Tarih Kulubu Bulteni, 2007/1: 102-108.
- Altun, D. 2013. Ipekbocekliginin Sosyal Yasama Etkisi. Bursa'da Yasam Dergisi, Aralik: 118-125.
- Anonymous. 2010. Statistical Year Book 2010. Turkish Statistical Institute, Prime Ministry: Ankara.
- Anonymous. 2013. Livestock Statistics, Statistics by Theme. Turkish Statistical Institute, Prime Ministry, Ankara. (accessed on 3.1.2014)
- Anonymous. 2014. Strabon. <http://en.wikipedia.org/wiki/Strabon> (accessed on 15.01.2014)
- Basaran, H. Z. 2013. Bursa Ipekciliginde Kadnlari Rolu. Bursa'da Yasam Dergisi, Aralik: 114-117.
- Ceyhan, A. 2013. Seyyahlarin Dilinden Bursa'da Ipek. Bursa'da Yasam Dergisi, Aralik: 364-385.
- Cakici, M. 2013. Bursa IpekCekim Fabrikasi ve İstihdam Sorunu (1851-1873). Bursa'da Yasam Dergisi, Aralik: 56-66.
- Ciftci, C. 2013. Bursa'da IpekCekim Fabrikalarinin Kurulmasi. Bursa'da Yasam Dergisi, Aralik: 50-53.
- Colak, C. 2013. Cumhuriyet Doneminde Mugla'da Ipekbocekligi Ve Ipekli Dokumacilik (1923 – 1970). Mugla Universitesi, Sosyal Bilimler Enstitusu Dergisi, 8: 81-97.
- Dortok-Abaci, Z. 2006. Bursa Economy According to the British Consular Reports (1848-1896). UludagUniversitesi, Fen Edebiyat Fakultesi, Sosyal Bilimler Dergisi, 2006/2, 7 (11): 159-171.

- Ergenc, O. 2013. Bursa'da İpekli Dokumacılık. Bursa'da Yasam Dergisi, Aralık: 28-30.
- Ersevinc, M. 2013. 19-20. Yuzyillarda Bursa'da İpekçilik. Bursa'da Yasam Dergisi, Aralık: 92-101.
- Ertugrul, M., Dellal, G., Elmaci, C., Akin, A. O., Pehlivan, E., Soysal, M. I. & Arat, S. 2010. Conservation Of Farm Animal Genetic Resources And Their Sustainable Use. Turkish Agricultural Engineering Technical Congress VII, 11-15 January 2010. Ankara.
- Goral, D. 2013. Olgunlasma Enstitusu. Bursa'da Yasam Dergisi, Aralık: 322-329.
- Gunay, N. A. 2013. Yavuz Sultan Selim'in İpek Ambargosu. Bursa'da Yasam Dergisi, Aralık: 166-173.
- Imer, Z. 2005. Miladi Donem Oncesinde Orta Asya'da İpek. Bilig, Turk Dunyasi Sosyal Bilimler Dergisi, 32: 1-32.
- Inalcik, H. 2013. Bursa ve İpek Ticareti. Bursa'da Yasam Dergisi, Aralık: 22-25.
- Karaarslan, Y. Z. 2013. Osmanli Semti Muradiye'de İpekçilik. Bursa'da Yasam Dergisi, Aralık: 102-107.
- Kaya, R. and Tutkun, M. 2012. Turkiye'de İpekbocekçiligi. 8th National Congress of Animal Science Students, 22-23 May 2012, Sanliurfa.
- Kemankas, I. 2013. Dunyanin En Uzun Hatli Teleferigi Bursa'da. Bursa'da Yasam Dergisi, Aralık: 420-425.
- Kirayoglu, K. 2013a. Bursa'da Ticaret ve Mekan. Bursa'da Yasam Dergisi, Aralık: 174-179.
- Kirayoglu, M. 2013b. İpekŞehri Bursa'da Carsinin Olusumu. Bursa'da Yasam Dergisi, Aralık: 84-91.
- Kivrim, I. ve Elmaci, S. 2011. Amasya Sericulture in Ottoman Period. Turkish Studies, 6/4: 715-728.
- Oguzoglu, Y. 2013. Bursa Uygulanan İpek Dokuma Teknolojileri. Bursa'da Yasam Dergisi, Aralık: 56-66.
- Peker, E. H. 2013. Bursa İpekçiliginden Bir Kesit. Bursa'da Yasam Dergisi, Aralık: 266-273.
- Soysaldi, A. ve Ozdemir, H. A. 2013. Bursa Kiz Ceyizinde İpegin Yeri. Bursa'da Yasam Dergisi, Aralık: 156-165.
- Sahan, U. 2013. Gecmisten Gunumuze İpekböceği Yetiştiriciligi ve İpekçilik. Bursa'da Yasam Dergisi, Aralık: 40-46.
- Tas, H. 2013. Bursa Folklorunda İpek ve Koza. Bursa'da Yasam Dergisi, Aralık: 136-147.