



THE DEVELOPMENT OF SERICULTURE HISTORY AND PRESENT SITUATION IN TURKEY

**PROF. DR. ÜMRAN ŞAHAN
ULUDAĞ UNIVERSITY, BURSA- TURKEY**



- The map of silk road



THE IMPORTANCE of SILK ROAD

- Transportation of silk and spice as well as other products from east to west, is formed commercial roads named as "Silk Road" today and reaching Europe from China.
- Silk Roads were not only the commercial roads but also maintained cultural relations between east and west for centuries.
- Turkey has major factors for silkworm rearing in terms of historical background of 1500 years in sericulture industry with experience and traditional technologies.





- Silkworm rearing which came to Anatolia for the first time in the year 552 during the Byzantine Empire had started to spread beginning with the Marmara region.
- Silk cottage industries were first established in Turkey during the 14th Century, and developed in a short time and to become world famous. Anatolia had become an important centre for the silkroad and a magical city Bursa started to become the capital of silkworm for the middle east in the silkworm history.



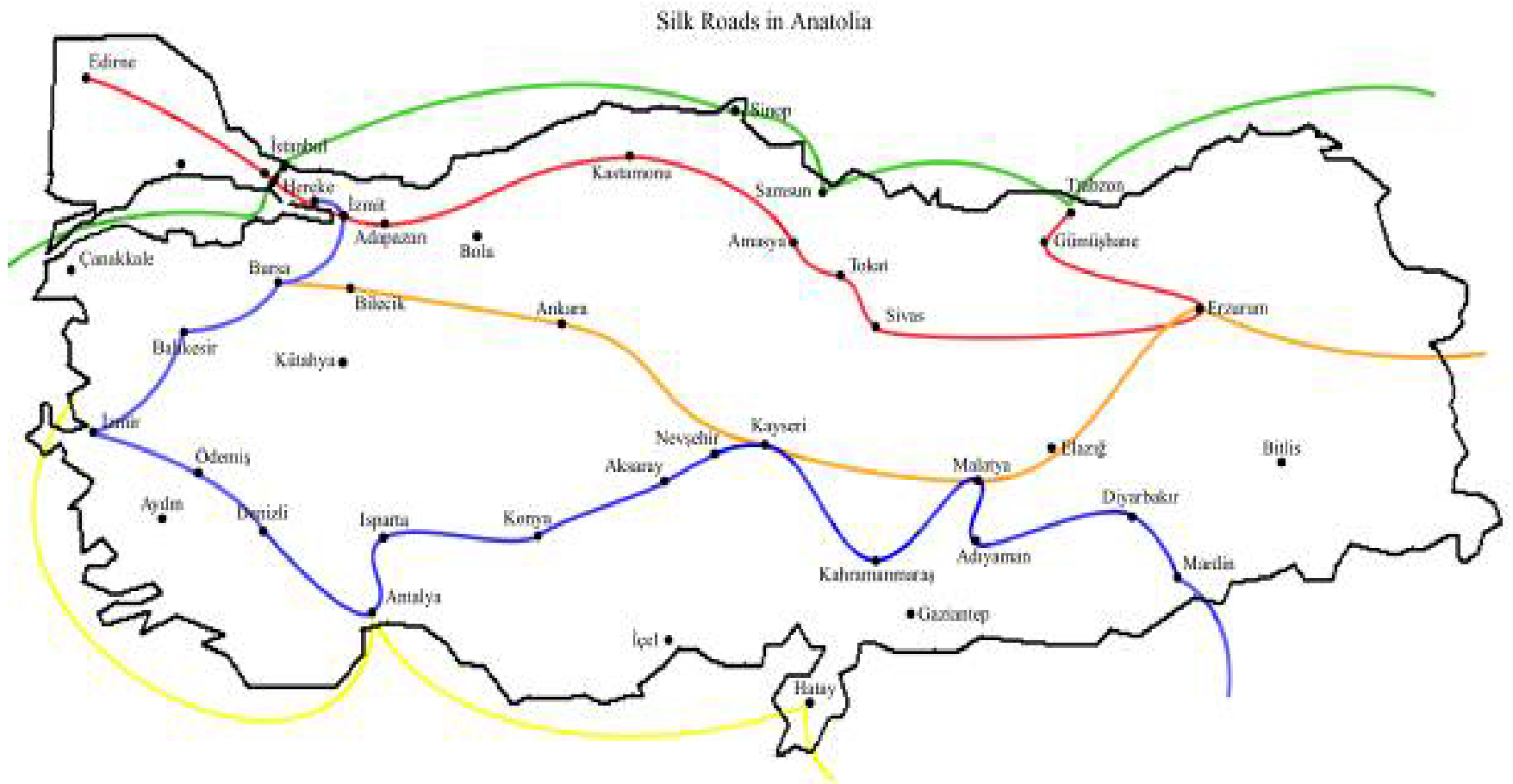


FIGURE 1. SILK ROADS IN ANATOLIA



- Some important silk roads in Anatolia cover the following regions as follows,
- At north; Trabzon, Gümüşhane, Erzurum, Sivas, Tokat, Amasya, Kastamonu, Adapazarı, İzmit, İstanbul, Edirne;
- At south; Mardin, Diyarbakır, Adıyaman, Malatya, Kahramanmaraş, Kayseri, Nevşehir, Aksaray, Konya, Isparta, Antalya, Denizli centers are followed.
- It is known that Erzurum, Malatya, Kayseri, Ankara, Bilecik, Bursa, İzmit, İstanbul route is also used. Extension of Antalya - Erzurum route, composed with connections of Sivas and Kayseri on North and South routes, was connecting Anatolia to Iran and Turkmenistan.



SILK HANDCRAFT COTTAGE INDUSTRIES IN THE PAST

- For a long time, silk was taken from the Iran, after that this policy was abandoned and silkworm rearing was started at Bursa in 1587.
- Bursa had been a historic silkworm center for both silk trade and silk woven fabric production in the past. Silk weaving which was started during the XIV century and developed during XVth century and peaked at the XVI century.
- In 1500 years there were about 1500 silk weaving looms in Bursa. From XVIth century silk weaving decreased, and Anatolia become a raw silk exporting country.



- The first silk reeling mill was opened in Bursa by Konstanz Bey in 1833, and a second by Boduryan Efendi in 1843. Imperial Silk Mill was opened by Sultan Abdulmecit in 1852.
- Especially three different types of materials in this century as 'Kadifa, Kemha and Tafta' were woven in Bursa and these were sought after in European countries, Iran and even China. The silk processing plants in Bursa and İzmit had reached a total of 85 until the year 1860.

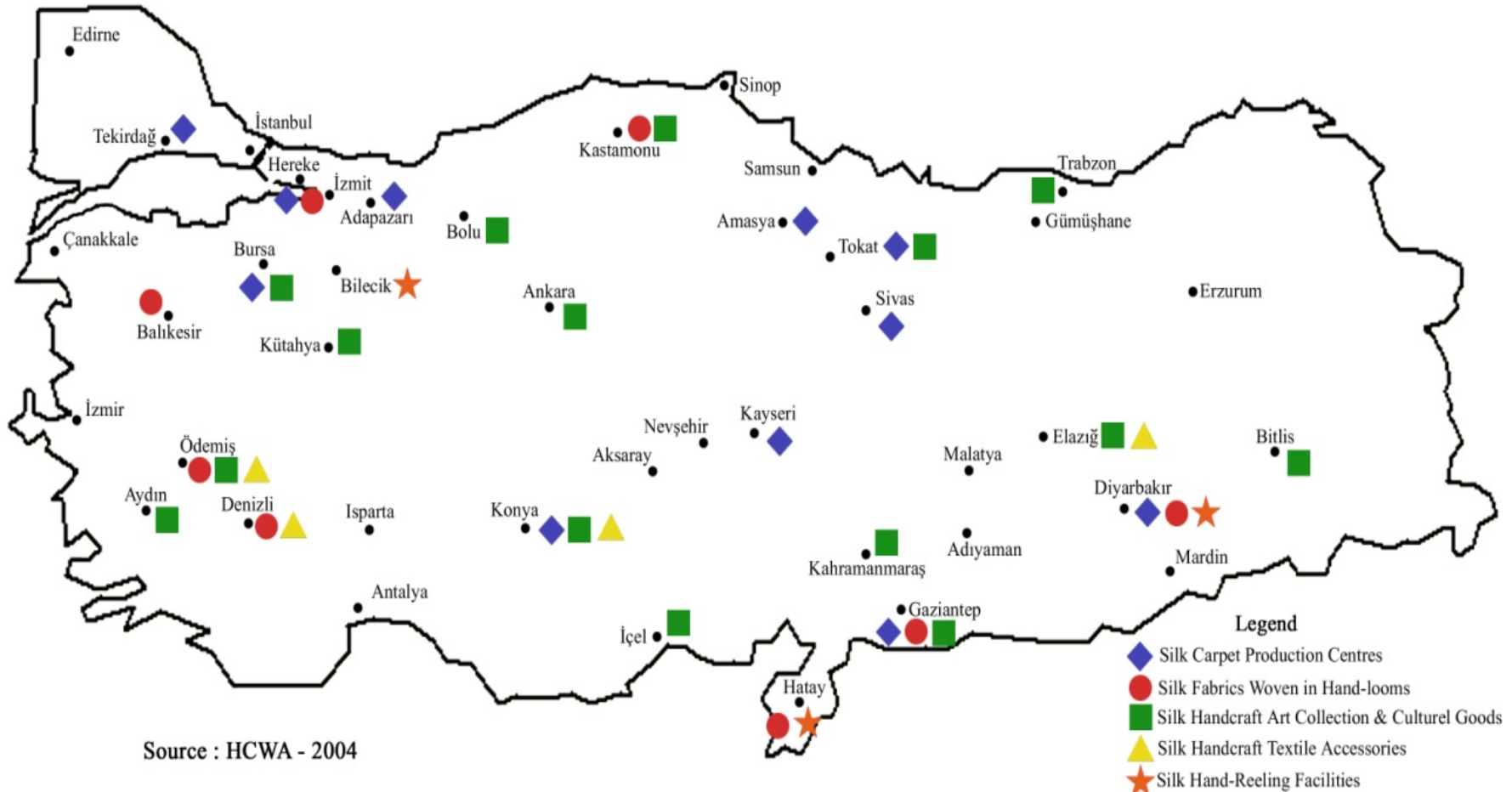




- Kozahan was the most important silk road center in Bursa



Silk Handcraft Cottage Industries Map of Turkey



Source : HCWA - 2004

DEVELOPMENT OF SERICULTURE IN THE PAST

- After discovering the disease free-egg (seed) production method by Pasteur and the establishment of the school named ' Harir-Darül-Talimiin 1888 in Bursa.
- The school' was the basis of the silkworm research institute in Bursa for the aim of producing disease free egg and to educate technical staff.
- After many student graduated from this school cocoon production started to increase and the highest cocoon production reached 18,338 tonnes in 1908 and was obtained 1970 tonnes of raw silk in 1910.
- However, during the first world war and the war of independence there were big production decreasing again and cocoon production dropped the between 250-300 tons.





- 'Harir- darü't- talimi' was the first Turkish silkworm education center in Bursa



- After the globalisation movement in the 20th Century and especially China opened the doors for international trade. As a result of that, Turkey's sericulture and cottage industries effected negatively.
- After World War I ended and Republic of Turkey was found in 1923; new laws were implemented to protect the sericulture industry.
- In 1970s, government support came into effect to rearing polyhybrid eggs instead of native monohybrid eggs and also fresh cocoon trade was encouraged to develop sericulture in 1980s.
- Thanks to the continuous government support, cocoon production increased every year and in 1990 it reached its peak point at 2000 tones annually. However, this trend came to an end and due to several reasons, total production started to decline like in many other countries.



PRESENT SITUATION IN SERICULTURE

- Although Turkey's silkworm rearing and fresh cocoon production has passed through a crisis period in recent years, it has continued to maintain its characteristic of being a traditional production which the producers can not give up
- The fresh cocoon production in Turkey intensively done in the cities of Diyarbakır, Bursa, Bilecik, Eskişehir, Sakarya and Antalya.
- Cocoon production which was 2000 tones annually until the year 1990. But after large decreases were experienced between the years 1990-2000 and dropped to 46.621 kg in the year 2001. Fresh cocoon production entered once more into an increasing trend and in the year 2016 104 tones of fresh cocoon was bought by Kozabirlik .



Table 1. Production of sericulture in years

Years	Sericulture farmers Number	Fresh cocoon production (tones)
1940	63.498	3.014
1960	60.370	2.444
1980	43.025	1.707
1990	44.541	2.127
2000	2.210	60
2005	2.729	160
2010	2.183	129
2012	2.572	134
2014	1.760	84
2015	2.015	115
2016	2.001	104



- **However, there has been several problems in Turkish sericulture which caused important decreases in production after 1990's.**
- **1)** The migration of people from villages to cities speeded up due to the industrial development,
- **2)** The increase in the use of pesticides and chemicals depending on the development of marketing channels in agriculture ,
- **3)** The yield of alternative agricultural products is better than cocoon and low sericulture productivity,
- **4)** Difficulties in silk carpet export caused by the First Gulf War ,
- **5)** Smuggling silk, yarn into Turkey.



- Turkey has a huge potential for local silk market development, which still needs more than 200 tons of raw silk. There are more than 2000 active families engaged in cocoon production activities in upper land villages where they do not have any alternative cash crops and several companies are engaged in silk carpet business.
- As a result of decrease in cocoon production since 1990s, the country imported about 200 tonnes of raw silk to meet the domestic demand of silk carpet industries.
- Recently, the government implemented new measures to support the sericulture sector by offering a direct purchase guarantee through sectoral organizations. Also quality improvement for cocoon has been under consideration and plastic mountages have been distributed to local producers to support this policy.
- Recently, handcrafting is supported by many local governments, like Bursa and Diyarbakır. In Bursa, 216 looms were distributed for carpet weaving and employment opportunities were provided for young women in the rural areas.
- However, despite the growth potential for silk made products, local cocoon and silk production is not sufficient to meet the demand, even today



- **There were two main organizations involved in sericulture industry up until July 2005:**
- The Sericulture Research Institute (SRI) under the Ministry of Agriculture
- Rural Affairs and Kozabirlik,(the Union of Sericulture Cooperatives.
- After, the Enstitute was closed by the goverment and now Kozabirlik is the only orginazed institue, which harbours in its structure all the stages from egg to the silk.



- It has known that our genetic, native races like **Bursa's White, Hatay's Yellow** have been used to produce cocoon and eggs for many years in Turkey.
- In Turkey, instead of the native race polyhybrid rearing started, in 1974.
- Today native races and foreign origin are preserved as genetic resource by the Ministry of Food, Agriculture and Livestock, In Turkey cocoon production has been making with producing of hybrid eggs by using M and N lines.
- It is necessary to breed new varieties adaptable to the natural conditions in Turkey with resistance to silkworm diseases and high productivity.



- Therefore, we carried out the Project between 2014 and 2016 years with the aim of identifying new parents and hybrids by determination of general and specific combination ability (GCA and SCA) and heterosis in the parents lines and their hybrids, that were selected from our gene source, to determine new hybrid combinations that could be alternative or have superior yield compared to MxN hybrid that is used in production.
- According to the results, the best hybrid determined under controlled conditions, and we will test the new hybrid under producers conditions in this rearing season.



- When we worked on our project is named of ‘Generate Parents and Hybrids With Superior Combining Ability For Yield and Quality In Producing Fresh Cocoon and Raw Silk’.



STRENGTHES, WEAKNESS, OPPORTUNITY, THREAT FOR THE SERICULTURE DEVELOPMENT IN TURKEY FOR TODAY'S AS FOLLOWS;

◦ **Strengthes**

- Government supporting to encourage cocoon and silk production by providing subsidy of cocoon purchase and silkworm eggs in free of charge.
- Natural and social conditions are suitable to improve sericulture industry
- Climate conditions and unemployed manpower in the countryside .
- **Weakness**
- Low cocoon productivity due to traditional way of silkworm rearing and improper rearing conditions.
- Poor resources of silkworm varieties – only one variety of silkworm for production.
- Rearing houses and equipment are not suitable for high quality of cocoon and silk.
- Lack of young generations in the villages to continue sericulture activities in the country



- **Opportunities**

- International price of raw silk is increasing due to decreasing silk production in the major countries
- World famous Turkey carpet is welcomed by European countries and America.
- Turkey has a historical background of 1500 years in sericulture
- Industry with experience and traditional technologies

- **Threats**

- Import of raw silk from China and Uzbekistan with lower price than the domestic product.
- Relatively small amount of cocoon and silk production is not sufficient to have strong competition with foreign products.



MAJOR PROBLEMS OF THE SERICULTURE INDUSTRY IN TURKEY

- **Mulberry cultivation:** Most of mulberry trees are more than 30 years old, dispersed around farmers' houses and roadside without applying pruning method.
- **Rearing houses:** The farmers reared the silkworms in their living rooms and bedrooms, because they did not have separate rearing houses; it is acceptable considering investment cost and only one rearing in a year.
- **Control of rearing conditions:** The silkworm rearing duration from initiation of rearing to spinning cocoons took nearly 30 days, which are very long larval duration due to low temperature during young silkworm stage.



- **Cocooning frames:** At the end of silkworm rearing, the farmers put the bushes and small branches onto the rearing bed to provide spinning space, which affect negatively to formation of good cocoons.
- **Low cocoon productivity:** The average cocoon production was low with approxsmetri 25-30 kg of cocoons per box of silkworm. the cocoon productivity per unit silkworm eggs in Turkey should be improved by providing good quality of mulberry leaves and adequate rearing.
- the cocoon productivity per unit silkworm eggs in Turkey should be improved by providing good quality of mulberry leaves and adequate rearing.
- In additional, One of the greatest problems for silk carpet producers who need quality silk yarn is not to have a filature plant in our country which can do silk reeling along the lines of world standard. For this reason the raw silk reeling machines with 200 ends were installed in Eskisehir Province and the factory started raw silk production in February 2009.





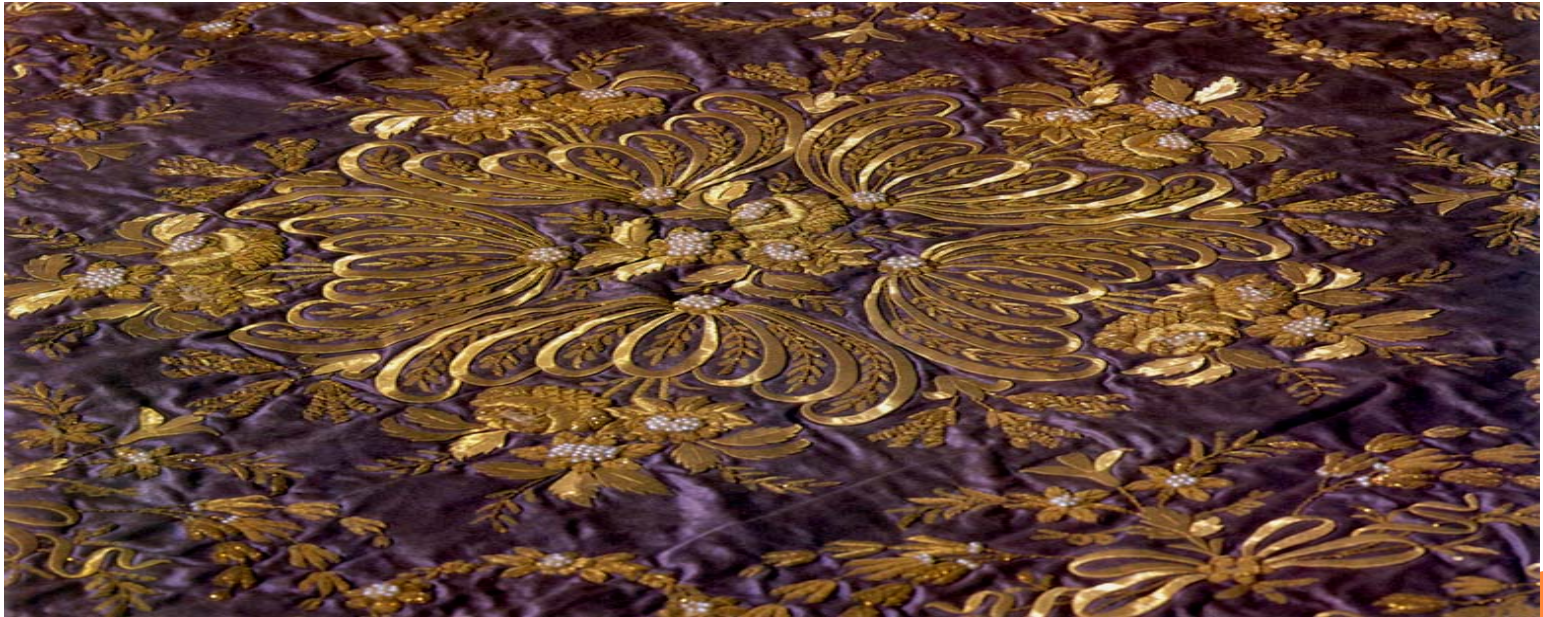
SILK WEAVING AND COTTAGE ENTERPRISES

- Turkey has a very long tradition and a huge market potential for local silk handicraft and silk carpets; and a rising chance to export some abroad.
- Especially, handmade silk carpets of Hereke, which can be found in many royal palaces around the world reflects the elegance of Turkish silk crafting.



- **Embroidery (Nakış)**

- Embroidery is the ornamentation of materials such as leather, cloth or felt with silk, wool, linen, cotton and metal threads and needles.



- **-Edging Embroidery (Oya)**

- Oya is the name of ornamentation knitted by a coloured thread in the shape of a leaf or flower.



- **Knitwear**

- Knitting is done by holding the thread with loop knots with the help of the needle.



○ Needle Embroidery

- Turkish needle embroidery is known as Turkish lace and does, indeed, resemble lacework at first sight.



○ Cocoon Embroidery

- The main decorative elements are made with cocoons, and then parts knitted with pins or hooked needles are added to the cocoons.



o Bead Embroidery

- o Bread embroidery is done with silk, cotton and synthetic threads and by using pearl and beads.



○ Socks

- Knitted socks which occupy an important place and have a particular significance in Turkish handicrafts with their different materials and meaningful designs



○ Weaving

- Weaving can be defined as the production of a plain surface created by horizontal and vertical passing movements of weft and warp loops.





- A woman weaving silk in the Sultanahmet district of Istanbul ,Turkey.

HEREKE CARPET

- Hereke carpet is the cultural heritage of Turkey. The worldwide famous silk carpet called “Hereke” has been very attractive to both internal and external markets.
- Hereke are double-knotted, this results in the carpets having higher durability and the knots can not be undone and taken out unlike single knotted carpets which can come undone if pulled with force.



TurkishKnots





- The picture of Hereke carpet factory from İzmit Natali Avazyan archive in 1967.





○ Hereke carpet



- **The major problems in the artisanal / traditional silk handcrafts cottage industries development in turkey;**
- Low labour and materials costs in competing countries
- Replications of Turkish traditional designs:
- Imports of cheap products
- Market trends and consumer demands

- In conclusion,
- Turkey has a historical background of 1500 years in sericulture industry with experience and traditional technologies. Although Turkey's silkworm rearing and fresh cocoon production has passed through a crisis period in recent years, it has continued to maintain its characteristic of being a traditional production which the producers can not give up. Because the sericulture industry in Turkey has played an important role in improving livelihoods of small farmers in rural areas and silk weavers with traditional small looms, providing employment and income generation and earning hard currency for the nation.





○ Thank you for your attention!



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