

A Case Study of the Abandoned Fibre and Oil Crop Plant (*Linum usitatissimum*) with Special Reference to Recultivation in Turkey

Keten Lifi ve Yağ Bitkisi (*Linum usitatissimum*) ve Türkiye’de Yeniden Kültüre Alınması Hakkında Bir Çalışma

Research Article

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ABSTRACT

Based on the archaeobotanical evidence from the Fertile Crescent, flax (*Linum usitatissimum* L.) usage dates back to 10.000 BC. It was one of the important crops for fibre and oil production during the Ottoman Empire and the beginning of the Turkish Republic times. Due to changing agriculture policy and lifestyle of the local people, flax agriculture has been abandoned. However, several local organizations, both governmental and non-governmental, have been trying to keep this agricultural heritage by various activities.

Key Words

Ethnobotany, Flax, *Linum usitatissimum*, Turkey

ÖZET

Bereketli Hilal bölgesinden elde edilen arkeobotanik bilgilere göre keten (*Linum usitatissimum* L.) kullanımı, M.Ö. 10.000 yılına kadar uzanmaktadır. Keten, Osmanlı İmparatorluğu döneminde ve Türkiye Cumhuriyeti'nin ilk yıllarına kadar lif ve yağ üretimi için önemli bir tarım ürünüydü. Tarım politikalarının ve yerel insanların yaşam biçimlerinin değişmesiyle, keten üretimi terk edilmiştir. Bununla birlikte, bazı yerel derneklerin gönüllü olarak veya devlet desteğiyle yaptığı girişimlerle bu tarımsal miras devam ettirilmeye çalışılmaktadır.

Anahtar Kelimeler

Etnobotanik, Keten, *Linum usitatissimum*, Türkiye

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INTRODUCTION

The city of Sinop located in the Middle Black Sea region of Turkey was one of the important centres of flax agriculture since the Ottoman time. Therefore, the area has been selected for researching the flax culture in respect of agriculture and usage. Despite agriculture of flax has been abandoned throughout the area, it has been noticed that one of the local families tries to keep the flax tradition alive by keeping a huge bunches of flax, the seeds, and the instruments for manufacturing the linen. In this study, various stages of flax agriculture tradition, including harvesting, obtaining the fibres, manufacturing the linen and weaving clothes and other handmade instruments, have been documented. Traditional flax agriculture and industry practices in the region of Sinop under study show similarities to those in other parts of the world. Beside this, the processes for bleaching, called locally "ağartma" has been reported in this paper for the first time. On the other hand, extraction of the linseed oil has been also explained. Additionally, recultivation attempts of flax in Turkey have been discussed from different points of view.

Flax is extracted from the stem of *Linum usitatissimum* L. and it is composed of long sclerenchyma cells surrounding the phloem (Figure 1). This species and probably wild ancestor *L. bienne* Mill. and other 36 species of the genus naturally grow in Turkey [1]. The genus has 230 species worldwide and usage of the species as flax and linseed oil is dates back to 8th millennium in various parts of the Europe [2]. Due to extensive agricultural practice of *L. usitatissimum*, it was once extensive cultivation areas in Turkey, according to field survey of Zhukovsky and his colleagues [3]. They determined 16 races in various locations in Turkey (Figure 2) during the years of 1945-50. The usage of flax dates back to 10.000 B.C. in the area of the Fertile Crescent. The earliest finds of flax remains in Turkey come from a Neolithic settlement, Çayönü, in southeastern part of the country [4, 5].

Flax was cultivated extensively for weaves, rope and linseed oil during the Ottoman Empire time in various parts of the country for making rope in the Ottoman army and seaman. Some of the small cities

have been known for their famous weaves since the Ottoman Empire under the names of "Şile bezi, Kandira bezi and Buldan bezi". Several attempts for surviving this tradition and industry have been made by governmental organisations and local societies.

Seeds of the flax were processed in small factories (called "Bezirhane" in Turkish) for obtaining linseed oil as an important industry. The oil was used basically for cooking and lamp oil for the other secondary purposes [5].

MATERIALS AND METHODS

The work was carried out for observing current situation of flax agriculture and usage in the city of Sinop as a case study (Figure 2). Extensive field surveys have been carried out for observing the lands of flax agriculture in the area. During this survey many of the abandoned fields which have been used flax agriculture. Thirty small villages and smaller settlements have been visited to observe the traditional practices of flax agriculture and linen production.

Ayancık Public Education Centre and Türkeli Public Education Centre have been visited for observing the activities of re-establishment of the linen issue, and other related activities. On the other hand, we had interviews with forty local elderly people, who keep the flax tradition, from various sites of the area.

Local names of the instruments used and the flax industry have been quoted for contributing to the ethnobotanical knowledge.

RESULTS

1. We have determined that the flax agriculture is not actually ongoing in the region of Sinop although it was one of the main economic resources of the region up to fifty years ago.
2. One of the most prominent representatives of this heritage is Hanife Çetinkaya who is an elder lady in her eighties, living in Gürsökü village of Ayancık in Sinop. She keeps all kinds of equipments for flax agriculture, including extracting the fibres, processing them to rope and doing various handcraft materials.

3. The Public Education Centres of Türkeli and Ayancık have organising courses to young generation for weaving the linen and to give life to this tradition.
4. The Public Education Centres have been also organising a festival, called "Flax and Culture Festival" organized by local people and various societies for surviving this tradition.
5. The flax agriculture and weaving the linen in the area have been explained in detail according to the data obtained from the surveys and practises of Hanife Çetinkaya who is living in Gürsökü village of Ayancık.
6. A general survey of the flax agriculture and industry in Turkey has been made according to the literature and field trips to various locations. One of the active research centres of the flax is the Trakya Agricultural Research Institute (TARI) surveying various aspects of flax, surviving this crop experimentally and supporting the farmers by providing the seeds. In terms of the public interest, one of the projects has been started by the Hoca villagers of Ulus of Bartın in western Turkey by financial support of the U.N. and TARI provides the seeds to the local people.

The local society and the governmental organisations try to survive this tradition in the area and they also organize a flax festival per year.

This study on the flax culture and industry has been highlighted six points mentioned above. Furthermore, the traditional experiences of the flax agriculture and linen industry in the Sinop region have been documented below according to the field survey in the area.

Agriculture of the flax

Sowing time of the linseed is spring (summer flax) and fall (autumnal flax) per year, according to the purpose of the rancher. Early sowing (at March; summer flax) harvests in July and it prominent feature is having long fibres while late sowing flax preferable for its more linseed oil. Dry conditions support the plant for producing more linseed oil and humid conditions are favourable for tall plants giving more fibres. Density of the sowed seed per square meter affects the length of stem and villagers who are interested in fibres rather than linseed oil sow the seeds densely.



Figure 1.(a) Flax bundles harvested fragments by sickle and (b) The sclerencyma fibres extracted from crushed and wrapped stem by wrapped stem (arrow indicates the fibres).

Harvesting of the flax has been carried out by hand from ancient times to the 20th century, and then several types of equipments have been used for this. The common harvesting method which is more primitive is doing hand and the plant is pulled up (“yolmak”) with the roots or cutting by sickle at soil level. Then, they are allowed to dry under the sun as bundles. The seeds remove from the bundles. Then the stems are remaining in the field, in a pond or stream for retting (“havuzlama” and “gölleme”) during two or three weeks. Retting is a process employing the action of moisture on plants to dissolve the cellular tissues except the surrounding fibre bundles.

From flax stem to thread

Extracting the fibres: After completing the retting, the bundles of flax have been put in the scutching which is removing the straw and woody stem from the flax fibers. Scutching can be done both by hand or machine in a scutching mill. The most common method in the area is hand scutching which is done with a wooden scutching knife and a small iron scraper. After the scutching, the end products are long flax fibers and short coarser fibers. *The next step is heckling during which the fibers are pulled through for removing the remedies of stem tissues.* The instrument used for heckling is called “mengenez” made from wood bed of iron steel or bars at regular space. The fibres are processed for obtaining more softened fibres called “elyaf” by other instruments called “tarak”. These softened fibres which are put into

the process are known as “tarama” in the region.

From fibres to thread: Elyaf is composed of softened fibres in various thicknesses. It is divided into two major groups according to their thicknesses and processed by the “çıkırık”, which is a kind of wooden instrument (Figure 3). The fibres become a tread and it is called “gelep” at this stage. The geleps have been coiled to small stick about 1 m which is called “ılgıdır”. The tread coiled to ılgıdır is put into the whitening “ağartma” processes. For this purpose, there are wooden boxes called “kuyu” in about 1 m height, and several ılgıdır are put in it. The box is covered with a sheet and the ash is put on it. Hot water poured on the ash and pouring the hot water has been continued until the treads becoming white. The whitened tread is wrapped to “elepçek” for processing by another “çıkırık” and yielding the treats for ready to weaving.

The rest of the thin fibres are made of the second group which is characterised by more robust fibres. These are used for making various instruments of rope, carpet, sack and the others. Residues of the flax processing are also used for making some kinds of pillow and mattress.

Weave of the linen

Flax mills is a machinery for weaving the linen and it is called by the local people as “düzen” (Figure 4). One of the important parts of this primitive machinery is called “dolap” which is wrapped by

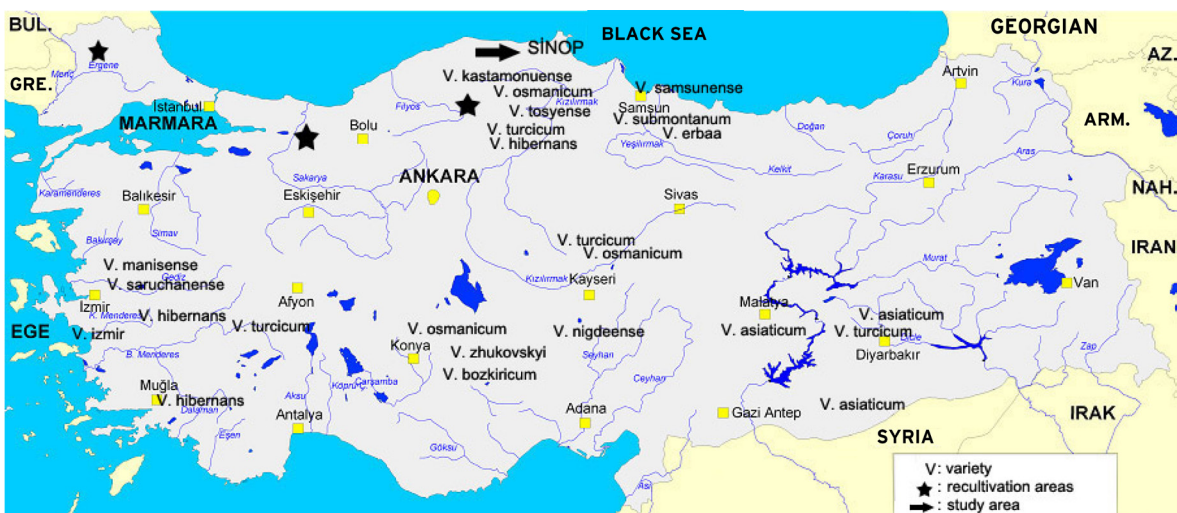


Figure 2. The flax races and growing areas in Turkey determined by Zhukovsky (data based on Zhukovsky 1951). The stars (*) indicate the present recultivation areas of the flax.

treads for weaving. The other important part of the düzen is “mekik” which is made from wood and it is used for weaving the treads as linen.

The dresses and other goods made from linen

The linen has priority to other fabrics by absorbing the sweat and keeping cool, especially in the hot whether conditions. Linen has been used for making traditionally all kinds of dress. Among them, “göğnek” which a kind of local women dresses is mostly used for women. In addition to this, “paça, cepken and üçetek” are other dresses for man and women. “Nezgep” is a kind of accessory which is put on head by women. Towel “peşgir” and pillow sheats are also commonly used products made by linen in the area (Figure 5).

Linseed oil

The seeds of the flax have been used for obtaining linseed oil “beziryağı” which is the second important product of the plant. The processes of obtaining linseed have been already explained by Ertuğ based on the research in Aksaray in Central Anatolia. Extraction and usage of linseed oil is common in various parts of Turkey and they have a long tradition [6]. The linseed oil has been used in folk medicine in an extensive range as painkiller, antiexpectoran and sore remedies and the others.

Flax Culture and Timber Festival

Although flax agriculture has been abandoned, it has strong effects on the folklore of the area and the local people have tried to keep alive this culture. The Ayancık Flax Culture and Timber Festival has been carrying out in the study area for twenty two years by both governmental and non-governmental organisations. During the festival, details of the flax agriculture, processes of the stem, various machinery for weaving and products based to flax have been exhibited. In addition to this, The Ayancık Public Education Centre has a course programme for flax weaving and making various products.

DISCUSSION

In the 1950s Zhukovsky and his colleques [3] determined sixteen varieties and several subvarieties of flax in Turkey. Their names and cultivation areas are indicated on the map (Figure 2). However, Zhukovsky did not give further information about the localities or size of the cultivation areas. Variety *albicans* is not given in the map due to the fact that it was just mentioned in the book without collection sites and any other information. These 16 varieties have not been either cultivated by local people or represented in the gene bank of the Turkish Agriculture Ministry (TAM). Based on the study of literature and



Figure 3. Çıkrık is used to make thread from the processed fibres.

personal communications with several officers, it has been proposed that the varieties mentioned by Zhukovsky have been extinct in Turkey. TAM has only the variety of "Yellow 85" and it is the single variety with certification. This variety has been cultivated for keeping the race by the Agriculture Ministry in the Department of Edirne. Some of the mentioned flax races have been kept in the seed banks of U.S.A and Canada.

The flax agriculture in the study area has been nearly abandoned because of changes in economy and life style. In addition, income from flax industry is low while the agriculture and linen are labor-intensive engagement. Some of the local organisations in the study area have been trying to keep this culture and some activities for surviving it at least in basic level. One of the important activities started in Hoca village of Ulus-Bartın has been supported by the U.N. Environment Department as a project under the title of "Alternative and Sustainable Flax Agriculture in Kure Mountain". Flax agriculture has been started in a field of 5 hectares, following an education program for 20 local people. The first year harvest of this ongoing project will be

done in 2011.

Similar initiations have been started in some villages of Kandıra-Kocaeli in north western Turkey by the Governmental bodies (see Figure 2). However, there is a limited progress on this recultivation attempts due to basically economic reasons.

The third work continued in the research centre of Edirne in the western Turkey is carried out by the Turkish Agriculture Ministry. The main goals of the project are to provide flax seeds to initiatives to improve seed production and to investigate flax races. Although there are the few initiations for flax agriculture it is in a slow.

Linseed oil was used extensively in both industry and culinary during the Ottoman Empire and early Turkish Republic times. Arising demand to linseed oil in terms of alternative medicine takes attention in the recent decade in Turkey. However, the linseed oil consumed for people is imported, not supplied from local productions.

One of the important demands to the flax rope



Figure 4. Voluntary students are trained for weaving, using the linen miles in the Ayancık Public Education Centre. Flax thread and mekik (the arrow indicates the mekik in the small picture).



Figure 5. (a) A towel, called peşgir is being woven in the düzen (b) A cloth called "Göynek" (c) towel woven.

was shipyard of the city of Sinop which is the major area of the city. Because of the decreasing capacity of the shipyard and using the synthetic rope the demand is reduced by the time. Secondly, flax agriculture requires great effort and processing it as linen is also very difficult job.

Our field survey and researches in the villages of the research area, Sinop, based on the interviews the local people who are interested in flax culture reveal that flax agriculture was extensive in the area until 40-50 years ago. Unfortunately, there is no attempt for growing flax elsewhere, except the three localities mentioned above. The people and societies who are interested in weaving the linen buy the threads, imported probably from Canada and Belgium. However, new trends of alternative medicine and keeping the folkloric and traditional values may improve annual production of flax with financial support from the government.

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