

## Study on the Evolution of Grass Cloth

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### Abstract

This paper gives literature and unearthed fragments of textiles inspection, it prove ramie and hemp textiles in China which have a long history. Because ramie textile fiber has excellent performance, ramie fiber was made of grass cloth, as the source of civilian clothing. In feudal Chinese society, under self-sufficient peasant economy mode, spinning and weaving promote the rapid development of grass cloth. However, with the rise of the cotton crop and the promotion of modern textile industry, manual ramie cloth begin to from the peak to the decline slowly.

**Keywords:** ramie, grass cloth, agricultural society

Ramie is regarded as "China grass". ramie raw materials for the production of clothing, it wear cool and humanoid in summer, so it is called summer cloth, or grass cloth, the kind of pure ecological rib fabrics and plain weave cloth was made of hand-made. Fine grass cloth show that "light as cicada's wings, thin as rice paper, smooth as flat mirage, fine as the silk" of characteristics. The deguming ramie has white color and flat cross section, it is known as the white ramie or flat gauze. Ko-hemp crops made ancient costumes in China, collectively known as cloth gown. It is symbol commoners or the common people of dress. Due to the fabric itself distinguished degree, the formation of civilian class wear "grass cloth" and upper class wearing "silk" of social fashion. Cotton is no large-scale cultivation in China before the Ming Dynasty, Civilians dressed in major textile fabrics use ramie production, which has low price and high output. It was not until modern times, the development of the textile machinery industry and Chinese peasant economy disintegrated, lead to the decline of traditional hand-made textile industry. Grass cloth witnessed the evolution of Chinese clothing culture, it is a living fossil of Chinese civilization.

### 1. The Origin of Grass Cloth

#### 1.1 The History Literature of Investigation

Ramie fiber is raw material of grass cloth, there are a lot of historical documents which recorded about ramie and ramie clothing in China. From the historical literature, it show that ramie originated in china. As early as in the 14-12 century BC, unearthed in Yin dynasty ruins of the inscriptions which have the hieroglyphs of silk and hemp (Vavilov, 1957). Hieroglyphs is a picture of the text. It ranged between entities and abstract. In the middle of 6th century BC warring states period, "The book of songs - Chen wind- East gate of Pool" describes that can ret ramie in the east gate of the pool (Guo, 1983). Pool's water temperature turn higher quickly under sunlight for a period of time, where oriented on the east side of the pool, it is good place for retting ramie. "The book of songs" is the earliest of recorded information about used ramie technology (Zhao, 2011). Dressing related to people's livelihood, so that Zhou dynasty began to set up officials responsible for managing textiles product. "Zhou Li - Tianguan Zhongzai" recorded that the full-time officials managed ramie planting and some kinds of species fabrics (Yang, 2000). The ancient clothes made of plant fiber which contained hemp, flax, jute, abutilon,

ramie and so on. "The book of Rites" records that ramie can be woven into rope cattle (Cui, 2000). People used ramie twist into petunia reins or woven sacks in rural areas. "The book of Songs - Chen wind - July" recorded that a bird called Lauber, when it began to tweeting, it remind people should be spinning and weaving grass cloth. In the 5th century BC. "Spring and Autumn - Annals of Zuo - Xianggong 29 years" recorded that Zichan sent grass clothing for friend of story (Zhang, 1993). The 1st century BC, "Huainanzi" showed that nobility wear mink coat in winter, wear fine ramie clothing in summer (Gao, 1989). Common people wear leather and wool fabric in winter, both rough and delicate ramie cloth are suitable for summer wear because of fell cool. There are many records about grass clothing in ancient literature, not to enumerate here.

### *1.2 Unearthed Ramie Cultural Relic of Investigation*

Bast fiber crops is the earliest use of textile fibers, it has "the source of spinning, ten thousand garment ancestor" of reputation. People began to use ko-hemp, banana leaf, then twisted into a rope and weaved cast stone about as early as 6000 years ago, which are the source of textiles civilization (Chen, 2007). In 1988, Chengtoushan Daxi culture site unearthed more than 6000 years history of coarse ramie fabric (Figure 1) in Hunan Province (Wang, 1996). In 1975, Hemudu Site explored a huge Neolithic cultural sites which has 6000 years of history in Yuyao county in Zhejiang province, where found the ramie rope and the integrity of the ramie seed. In 1958, Qiansanyang unearthed a Neolithic age of ramie fabric piece in Wuxing County in Zhejiang Province, it show that China has ramie fabric muslin far more than 4700 years ago (Zhao, 1981). In 1978, Wuyishan unearthed Warring states period of brown ramie cloth at No.3 and No.5 tomb in Chong'an County in Fujian province, its fibers are ramie (Gao & Wang, 1982). In 1970, Mawangdui unearthed pure yarn of Chanyi in Changsha city in Hunan Province, the collar and parts of sleeves are fine ramie fabric, its sophistication may be comparable with fine muslin cotton (Chinese Academy of Sciences Institute of Archaeology, & Hunan museum writing group, 1975). In 1979-1980, The dragon-tiger mountain cliff tombs unearthed a large number of cultural relics buried alive in Guixi County in Jiangxi province, unearthed ramie printed cloth at No.5 and No. 11 tomb, which is found so far the earliest of printed cloth (Li, Liu, & Cheng, 1980). According to the China textile academy of sciences by  $^{14}\text{C}$  age determination that dating have  $2595 \pm 75$  years. Then the tree ring inferred age, that dating back to  $2652 \pm 125$  years ago, which belong to the late spring and Autumn period to the early Warring States period (Lai & Liu, 1999). From the point of view of the cultural relics unearthed, ramie is Chinese nation important textile material, ramie cloth production technology has reached today fine textiles cotton level in the pre-Qin period.



Figure 1. Grass cloth of pieces Chengtoushan ruins unearthed 6000 years ago in Hunan province China

## **2. Development of Grass Clothing**

### *2.1 Excellent Properties of Ramie Fiber*

Ramie is the "king of the natural fiber" laudatory name. Grass clothing characteristics have direct relations with the excellent properties of ramie fiber. Ramie belongs to filament fiber, it have strength, high modulus, easy to weave of properties. In the middle of section ramie fiber is a hollow cavity, multi pore of pipe wall, fast heat conducting, good moisture absorption and permeability (Figure 2). Thus, grass clothing have absorbed water and good heat radiating effect, easy to wash and dry, ventilated, cool and comfortable wearing of characteristics. Ramie fiber component contains a huge trace elements, such as exhort, pyrimidine, purine and so on. It can inhibit staphylococcus aureus, pseudomonas aeruginosa, escherichia coli and other bacteria, soaking water non-perishable, and also has anti-mite, deodorant, anti-mildew effect.

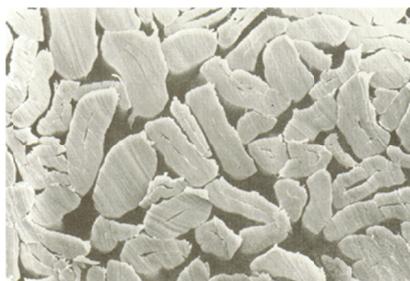


Figure 2. Cross section of ramie fiber

Bast fiber crops have some common disadvantages. People feel prickle, when body contact fabric hairiness, the drape effect is poor, easy to fold, poor color fastness, it relate with fiber cellulose and non-cellulose. ramie fiber should be superior in terms of defects compared with others. Ramie original paper contain high cellulose, it have smooth and soft, and good gloss. After simple retting, quality can be improved. Low cellulose content of hemp, can be relatively low degree of textile, clothing is relatively rough, also. Tab.1 show three main bast fiber crops of the original skin composition. In ancient China hemp and ramie are the main varieties of fiber crop, high quality textile flax began to promote breed in modern.

Table 1. Three main bast fiber crops of the original skin composition

Fiber	The composition of the content (dry weight)%						
	Cellulose	Semi Cellulose	Wax	Pectin	Water Soluble	Lignin	Ash Content
Ramie	73.59	13.29	0.54	4.04	7.35	1.19	3.53
Hemp	57.01	17.84	1.96	5.80	10.08	7.31	1.30
Linen	67.27	16.67	2.72	2.59	4.71	7.01	0.41

2.2 Main Clothing of the Civilian Population

In the Yuan dynasty, bast fiber crops is the main civilian clothing of resource, When cotton didn't have a large of planting. Historical documents recorded: "The earliest of ancient cloth start to ramie planted, cotton began to enter the central of plains in the Yuan dynasty. From the emperor's hat to the people's grass clothing are made of ramie." Han dynasty of "Yantielun" said: In the pre-Qin, only 80 years old people have eligible to wear clothes made of silk, and the rest of the time wear bast fiber crops product of clothes, so ramie cloth is also called grass cloth." ( Heng & Bai, 2001 ). It show that ramie cloth is ordinary dress, and hint that wearing "silk clothing" is a kind of ideal. Ramie is still the people the main clothing in the Song dynasty, Zhuang Chuo compiled "Jilebian" records: Civilian men wear ramie cloth every year, only in three days to marry a wife, they would wear silk to make clothes(Zhuang & Xiao, 1983). So poets Zhang Yu recorded a story in the northern Song dynasty: Rich people wore silks and satins, as feeding silkworm and making silk of people who can not afford to wear silk clothing because of sold high price. Silk and hemp are the two most important textile raw materials, because of the low out production of silk in the Song dynasty in China, the cost of textile is also high, ordinary people are not wearing silk products. Today, some museums from civilian homes to buy grass clothes. Figure 3 is the period of the Republic of China of dress.



Figure 3. Fashion Museum of Donghua University red purple dress female grass clothing

Ancient Chinese grass cloth thickness specified with "Sheng" indicates, that the specified pieces of cloth called every 80 yarn (about 1.5 foot) within one Sheng, which is about per millimeter 1.6 yarn, 2-foot and 2-inch standard width fix up 1 200 yarns in the Han dynasty. The number of Sheng more represent more fine cloth, which the given number has a defined in pieces of cloth width. Zhou dynasty provides a variety of thickness ramie cloth for different purposes: The mourning cloth use three Sheng of Grass cloth, hat is 6 Sheng, 7 to 9 Sheng of crude ramie cloth for slaves or criminals wear, also can be used for packing bag, 10 to 14 Sheng for the general civilian wear, it is a popular clothing. A dress worn by a noble need get to 15 Sheng. Its fine more than silk only nobles enjoy. The most of fine by up to 30 Sheng for kings, 30 Sheng ramie cloth made hat being called Ma crown (Figure 4).

In addition, ramie cloth is not only a kind of clothing and accessories, but also can make the mosquito net, food sacks, and use the ramie thread woven ramie rope and crafts, on the grass cloth re-processing, can make Grass cloth fan (Figure 5), grass cloth embroidery (Figure 6) and grass cloth painting (Figure 7).



Figure 4. Crown on Hanfu of version by the fine ramie cloth package



Figure 5. Wanzai grass cloth fan in Jiangxi province Chinese



Figure 6. Xinyu grass cloth embroidered in Jiangxi province China



Figure 7. Grass cloth painting "Lotus Pu Picture" size: 30×80cm

### 2.3 *Self-sufficient Natural Economy of Promotion*

Farming men and weaving women society civilization stretches thousands of years in ancient China, small-scale peasant family is the basic unit of society, peasant families assume the functions of the basic economic unit, independent economic decision-making, allocated economic of resources, use of family labor to carry out the production, its members common consumption. Agricultural economy has the characteristics of the family as the unit, Its flexibility is reflected in combined agriculture and family handicraft industry. In the vast rural areas, there are three ways to produce grass cloth. First, textile is to meet the needs of the family members dress; Second, grass cloth can act as rent in kind. Third, when the family of grass cloth production can satisfy the above two conditions, if it have a small amount of surplus, farmers will sell for merchants to in exchange for a small amount of income to support their family. Rural such a proverb: "One does not plow farmland, the people whom will face hunger, a woman does not weave, the people whom confront cold." Textile is to ensure that the family members wear warm which is fundamental basis for economic self-sufficiency. In ancient China officials would encourage civilians sericulture, spinning, weaving grass cloth. Clothing is a necessity of life, in the era of material scarcity, grass cloth is a precious goods. In the face of natural disasters or war, people will have a great influence on the issue of clothing. Tang dynasty poet Du Fu's "Shihao officials" in the records of such a story: Men went out to fight in the family, and women went out work without a complete set of clothes, the day was very difficult. There is no source material of the ramie textile, Of course wear became a problem. Farming men and weaving women symbol a small family of independence. Poet Fan Chengda in the "Four seasons scenery" wrote: During the day labor work in the field, in the evening women weave cloth at light. Even day and night was a day of similar unremitting toil, but life is still very hard. The Ming dynasty Wang Mian "Jiangnan women" wrote: "Weaving cloth and harvesting grain served for the rent of land." Textile attached to the family in the production, and become a part of the family to pay the rent. "Yongping Zhili hall annals" recorded: "male farm for easy to eat, female textile for make a living." When the commodity economy has a great development, some farmers will have extra grass cloth, then to market for exchange.

In the feudal society of China, the small peasant economy occupy the most of position. It require the vast number of working people to meet the needs of wear through the textile production at objective condition. It can be said that the mode prompted grass cloth of development in China. Today, the intangible cultural heritage grass cloth production process of location, Yichun, Liuyang, Ronglong, Chongqing still retain twiddling ramie threads for hand-made crafts. Inspected the local of grass cloth, it seems that can see the traces of Chinese ancient agricultural civilization.

## 3. The Decline of Grass Cloth

### 3.1 *Affected by Cotton Spinning*

Compared with bast fiber crops, cotton textile higher performance. In the early of Yuan dynasty Wang Zhen "Agricultural book" recorded: Cotton planting technology was introduced into south from north, its planting is not restricted by geographical location. Textiles made of cotton, as light-warm as the woolen, its softness can be compared with the high quality silk. Cotton planting requirement less the condition soil. Compared to the silkworm breeding. Firstly, people worry about the soil fertile not enough to mulberry leaves. second, people worry about silkworm diseases or death. Compared with ramie textile, less twist threads such a process, textile efficiency is higher than ramie textile. At the end of Yuan dynasty, Huang Daopo improved cotton textile technology on the basis of Li nationality cotton textile technology, and designed a series of advanced cotton textile tools, promote the development of cotton industry in China. Yuan and Ming dynasties government promote cotton plant and cotton textile industry in order to national prosperity and social stability, government has taken the cotton goods tax and the area of cotton planting is strictly regulated by law. All of policy made cotton began to grow large area in China.

### 3.2 *Modern Manual Ramie Textile Industry of Crisis*

In modern, Western with advanced textile technology, they dumped a large number of mechanical weaving cloth to China, brought a fatal blow to Chinese textile. European industry began in the textile industry, in the 18th century half leaf, spinning roller mechanism and weaving shuttle mechanism were invented, driving power of the British textile industry became slowly concentrating model of industrial production. With the opening of the country, because Western the quality of textiles higher than China's handmade cloth, and the price is cheaper, it squeezed seriously the living space of handmade cloth. The Westernization Movement in modern China one of the commanding generals Zhang Zhidong advice to emperor Guangxu in the plans to open weave layout proposal: From China with Western trade, the effects of trade projects, every year Western sold China of cloth more than ever before, brought handmade cloth turn less in China, including the original fabric handmade cloth

began to buy Western cloth. In 1888, China needs to cost fifty million ounces of silver to Western imported textiles, which is a heavy burden (Sun, 1957). Japan launched all-out war of aggression against China in 1937. War to the Chinese self-sufficient natural economy in the countryside brings great damage, many grass cloth workshops have closed down, the decline of China modern handicraft industry grass cloth, on the one hand, due to the decline of Chinese fortunes, China's modern industry is almost at a standstill. on the other hand, the traditional grass cloth industry backward technology, hand weaving cost high, lost market competitiveness.

#### 4. Conclusion

It has a history of 6000 years in China about ramie planting, ramie textile into grass clothing have a great of development in China. Because ramie is a kind of fine natural textile fiber, use it made of fine ramie garments, perspire all over non-stick body, ventilation and heat dissipation, cool, natural antibacterial of superiority. Grass clothing belong to the unique natural texture and excellent gloss effect. Coarse ramie lines can be twisted into rope or woven sacks. Fineness enough ramie, it can do mosquito nets, curtain, cloth pad. Through grass cloth reprocessing, can produce grass cloth fan, grass cloth embroidered and grass cloth painting and other crafts. It is a pity that ramie production have natural deficiency. Ramie fiber due to insufficient degumming, less than cotton soft, hairiness has prickle, drape well enough and color fastness. Cotton began to hit the states of ramie after Yuan dynasty. Ramie dominant position is replaced by cotton apparel fabrics in the mid-Ming Dynasty. Today with the improvement of people's living standard, the awakening of consciousness of traditional culture, under the advocate green natural and environmental awareness of guidelines, grass cloth began to win some cutting-edge designers attention. if ramie textile technology make a great progress, production process get improvement, promote the fashion of grass cloth of reconstruction, it can be assumed that will have a better tomorrow.

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