

Why Sericulture



Bucharest April 2011

1. Human Civilization

◆ Silk secretary was unravelled by Chinese 5,000 years ago. This invention is a great contribution to the human being



◆China silk weaving technology is highly advanced even in 2000 ago.



Virtual sculpture of Wife of the Primer, Changsha Kingdom (186 B.C.)



49 grams of silk cloth, unearthed in Changsha (186 B.C.)



Pot carve: pick up mulberry leaves (2300 years ago)



「山箔」

處理蠶的結繭，要用火加溫排濕。其方法是劈竹編織箔箔，下面以木架搭高六尺，地面前後左右每隔四、五尺擺放一個火盆。開始時，以小火引蠶吐絲，當結成繭衣時，再添加半斤炭，升高溫度。蠶吐的絲便能立即乾燥，經久不壞。



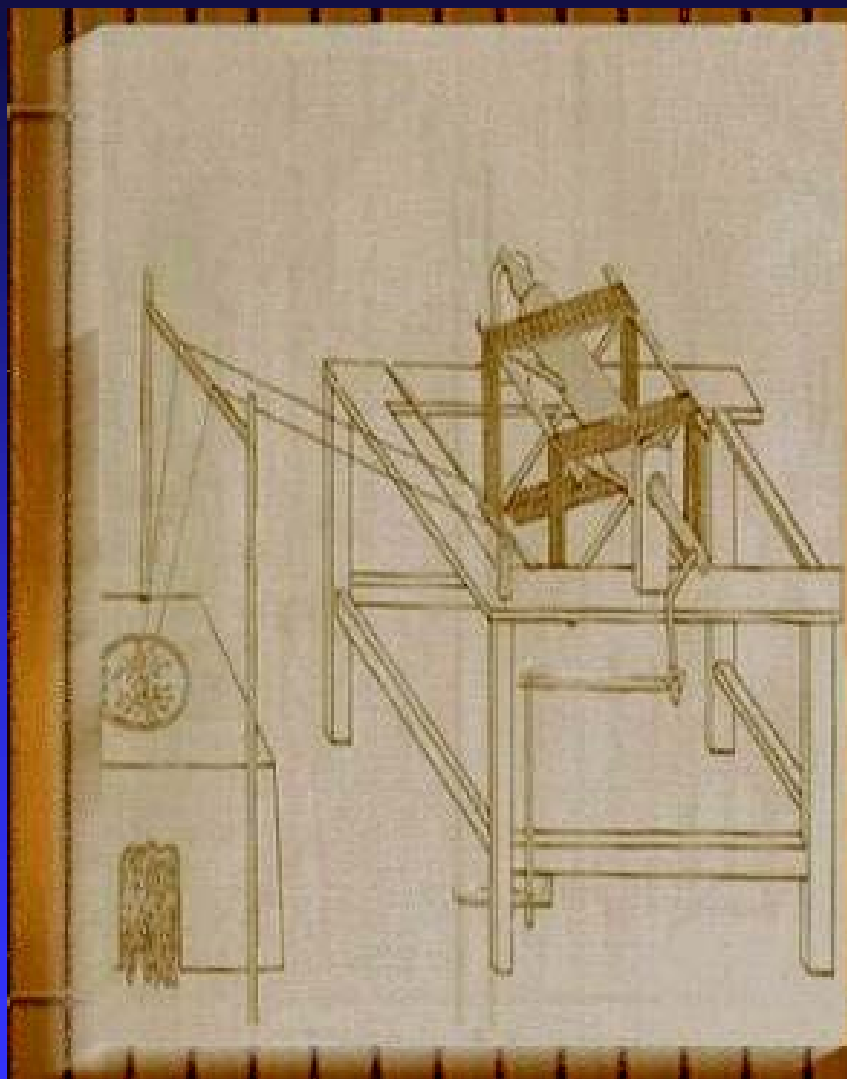
【擇簾】

繅絲用的簾，必須選擇形狀端正的單簾。這種單簾於繅時絲緒才不會亂；若是同宮簾（此指兩條簾共同結成的一顆簾）或由四、五條簾一起結的簾，就應該挑出來造絲棉，因為以這種簾繅出來的絲就會太粗。



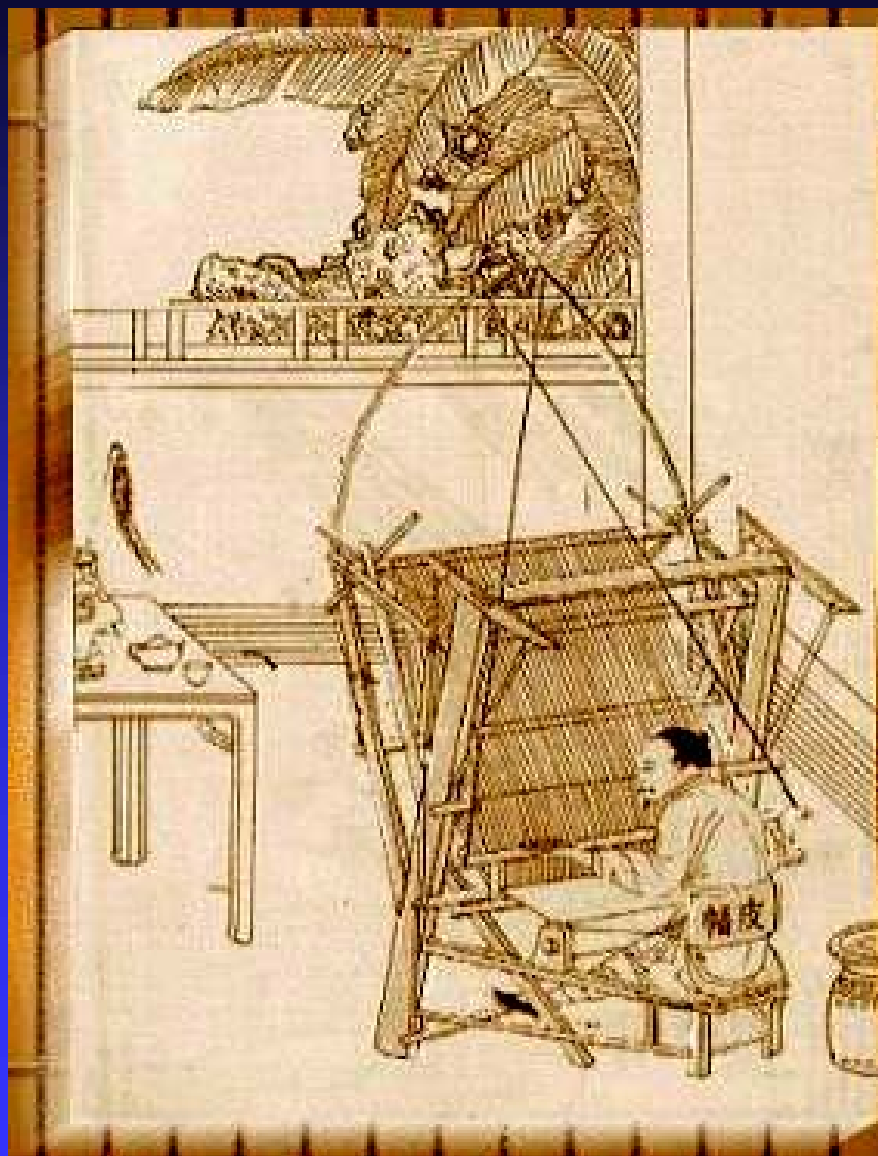
「繰車」

使絲質量好的方法有六字口訣：一叫「出口乾」；一叫「出水乾」。且用乾透不冒煙的柴燒水繰絲，才不會損害絲的光澤。

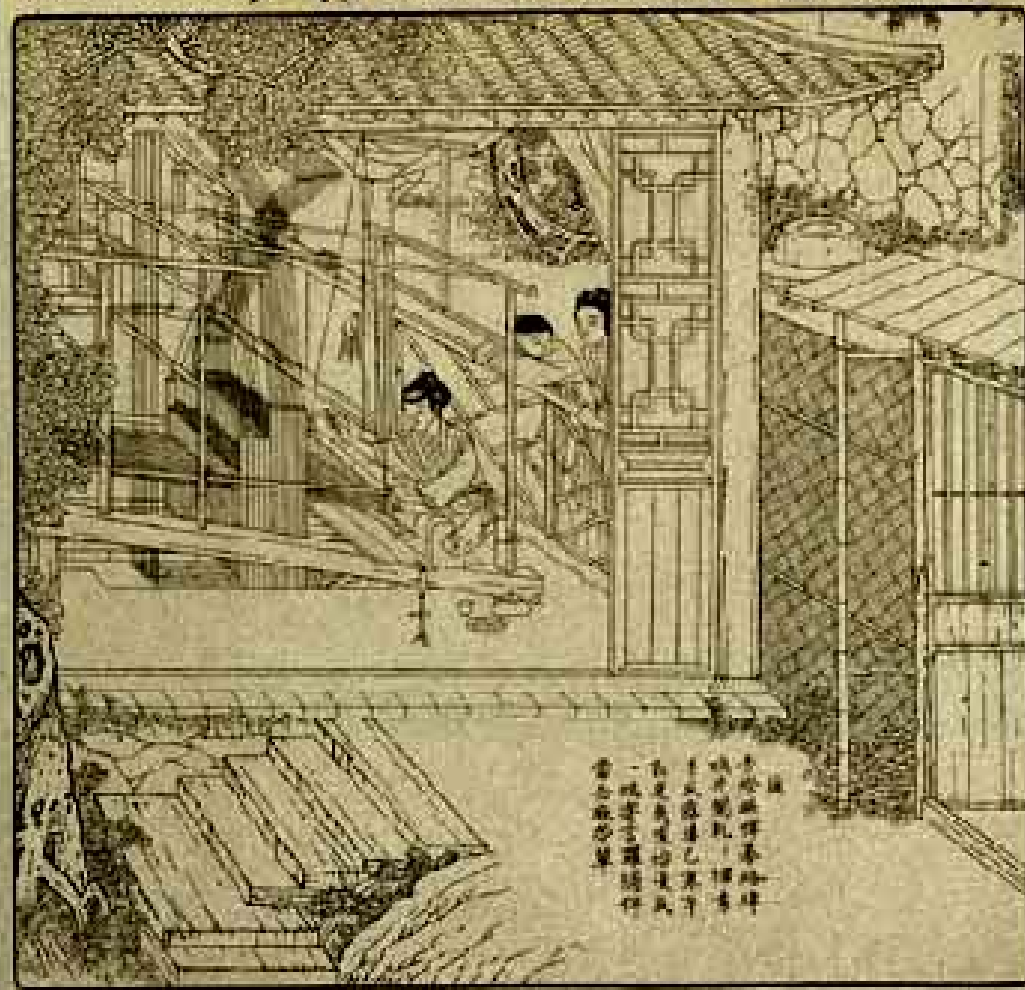


「腰機式」

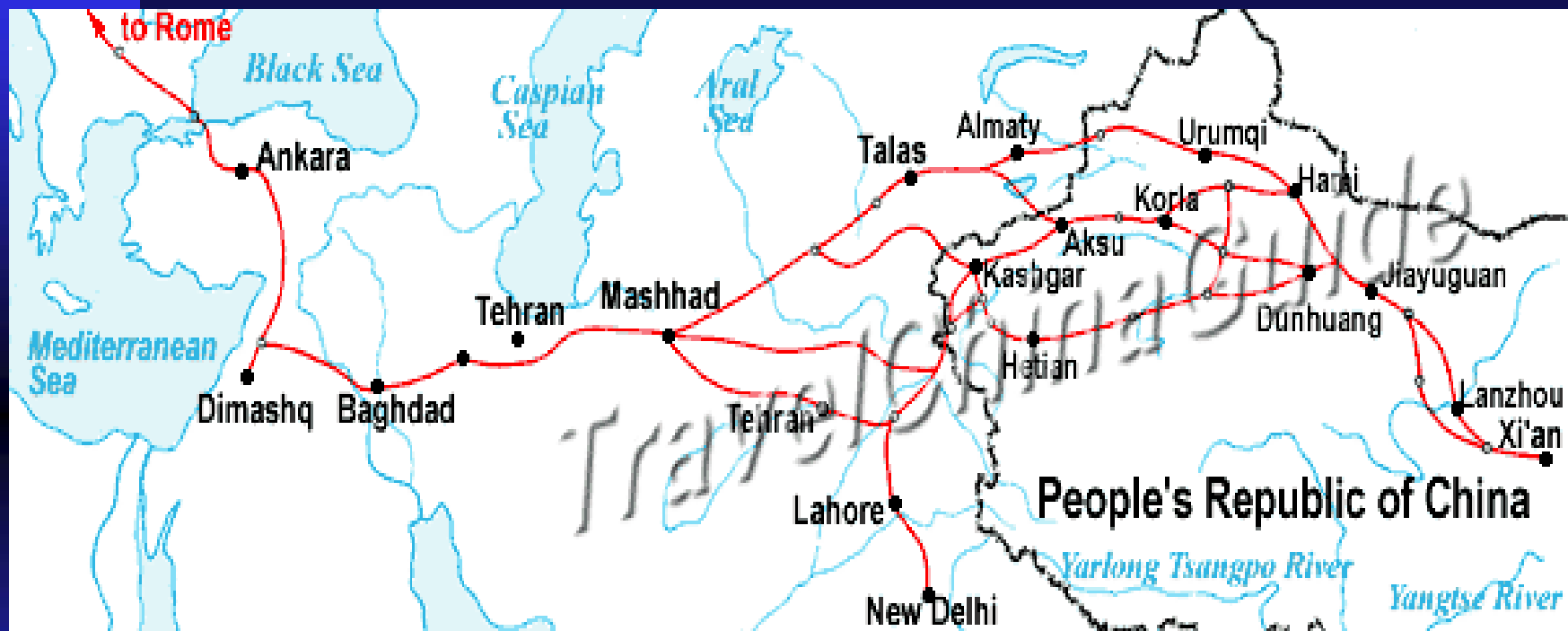
若要織杭西、羅地等地方的絹、輕素的綢，或銀條和巾帽用的紗，一般而言，均不使用花機，只用小機，以這種織機織葛、苧麻、棉布等，其織品平整結實，更具有光澤。



恒來歸
 續女功
 多南立
 勤勞惜
 綺羅綰
 歸條上
 經手作
 寂寞狂
 自來傳
 梭



此圖係
 續女功
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 綺羅綰
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 寂寞狂
 自來傳
 梭



Road (the 2nd century BC)



◆ *Ancient Greeks and Romans called China as “Seres” or silk country. Price of silk is equal to price of gold in that time.*

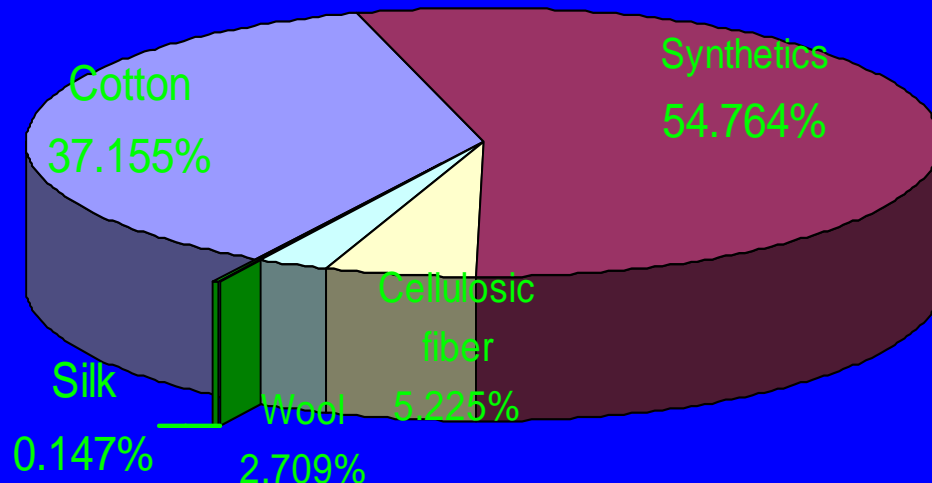


A Roman Lady

MENDAFSH	SILIKI	ТО	SUTERA	𐎎𐎡𐎴𐎠𐎢𐎺𐎠	SILKE
SERIKON	𐌱𐌹𐌺𐌾𐌰	𐌱𐌹𐌺𐌾𐌰	𐌱𐌹𐌺𐌾𐌰	𐌱𐌹𐌺𐌾𐌰	KITAJA
𐌱𐌹𐌺𐌾𐌰	𐌱𐌹𐌺𐌾𐌰	𐌱𐌹𐌺𐌾𐌰	𐌱𐌹𐌺𐌾𐌰	𐌱𐌹𐌺𐌾𐌰	𐌱𐌹𐌺𐌾𐌰
GZSE	𐌱𐌹𐌺𐌾𐌰	𐌱𐌹𐌺𐌾𐌰	𐌱𐌹𐌺𐌾𐌰	𐌱𐌹𐌺𐌾𐌰	𐌱𐌹𐌺𐌾𐌰
SILK	SOIE	SEIDE	SETA	SEDA	KONPUHA
SIKO	JEDWAB	SIKE	𐌱𐌹𐌺𐌾𐌰	SVILA	HARIRI
MATASE	HEDVABI	HODVAB	SELYEM	IPEK	

2. Silk Plays An Important Role In The Textile Industry

Share of silk in textile fibers in the world



◆ **Silk will never be available in large quantities and international supplies will no doubt remain limited in the future.**

(from Silk Review 2001)

◆ Silk production and trade is a big business in the world



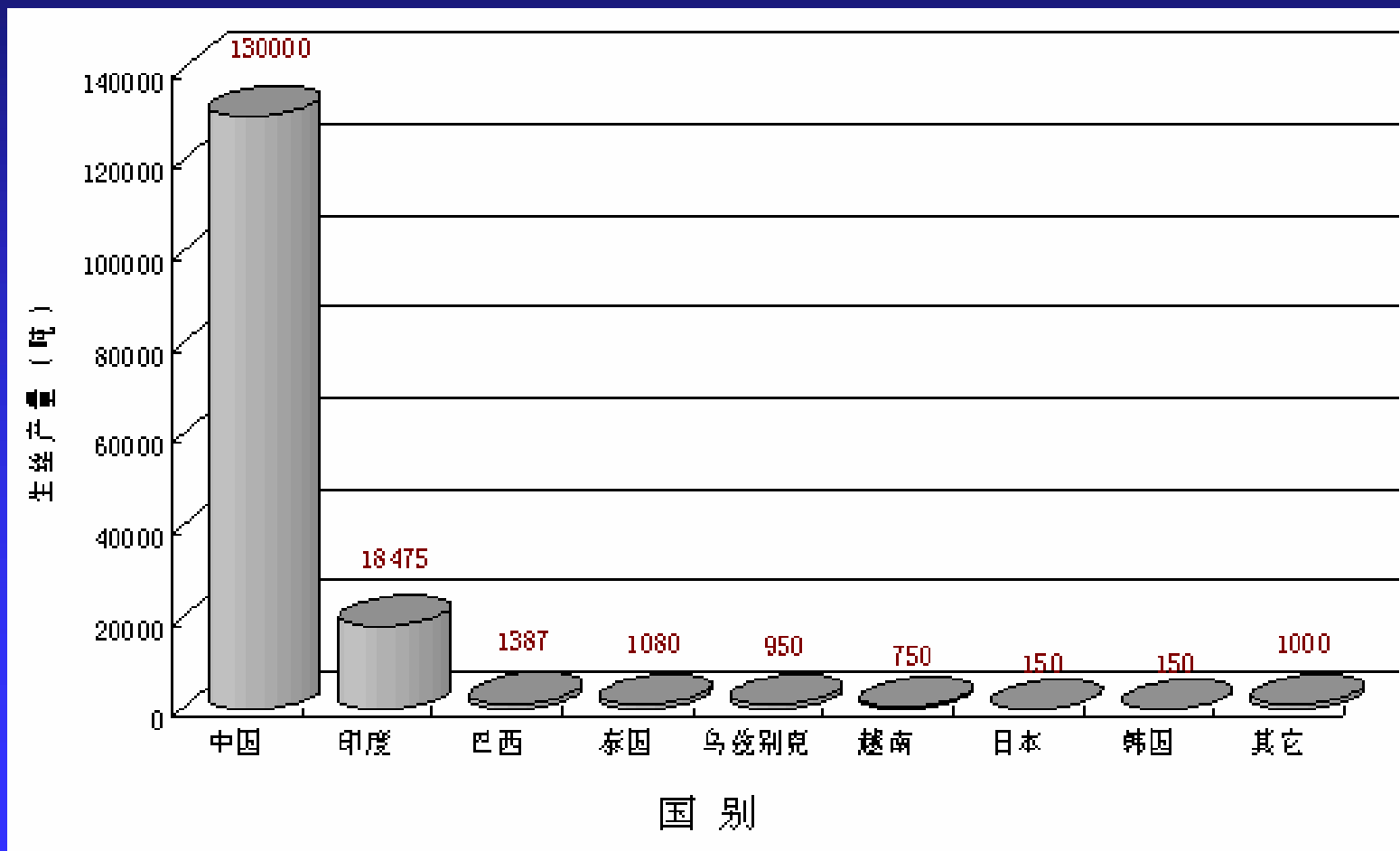
China Silk GDP
\$10000 million



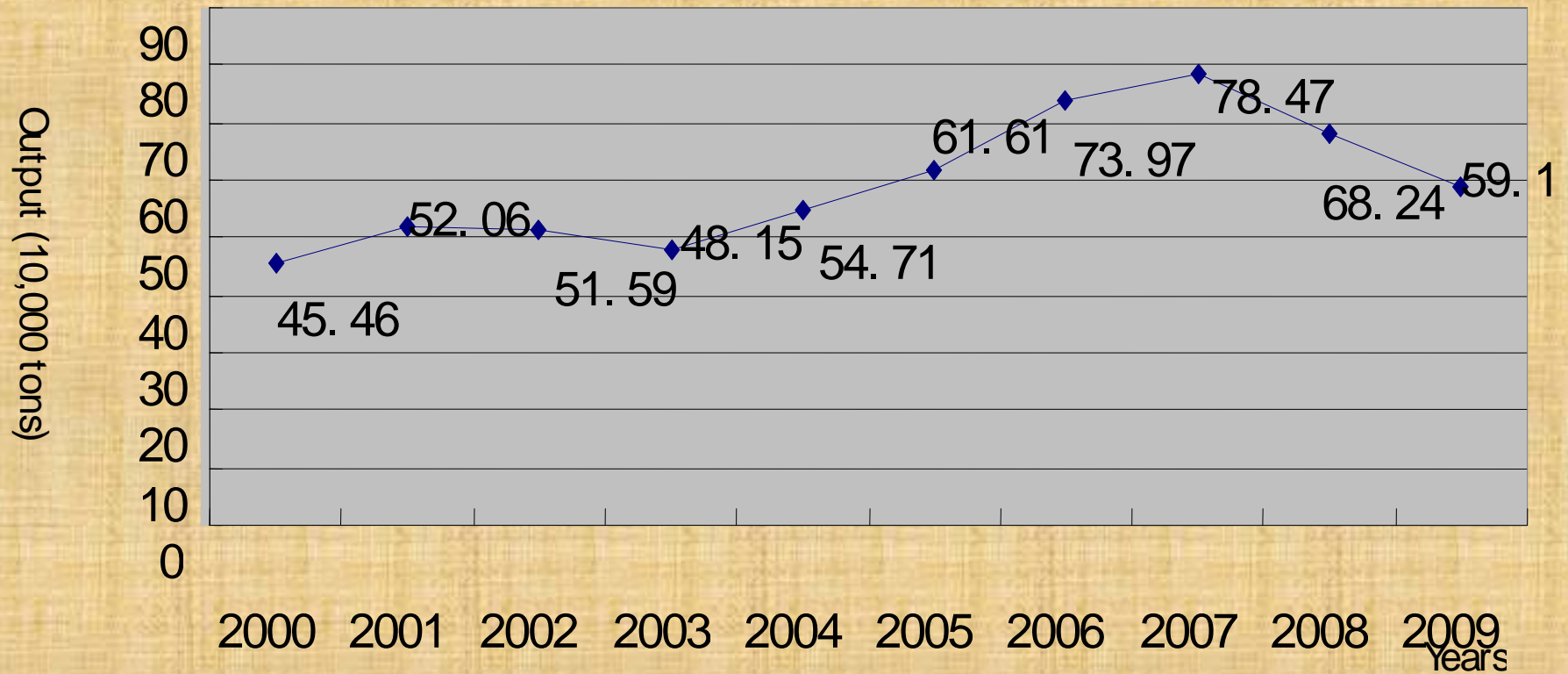
USA imports silk
\$2200 million

World production of mulberry raw silk

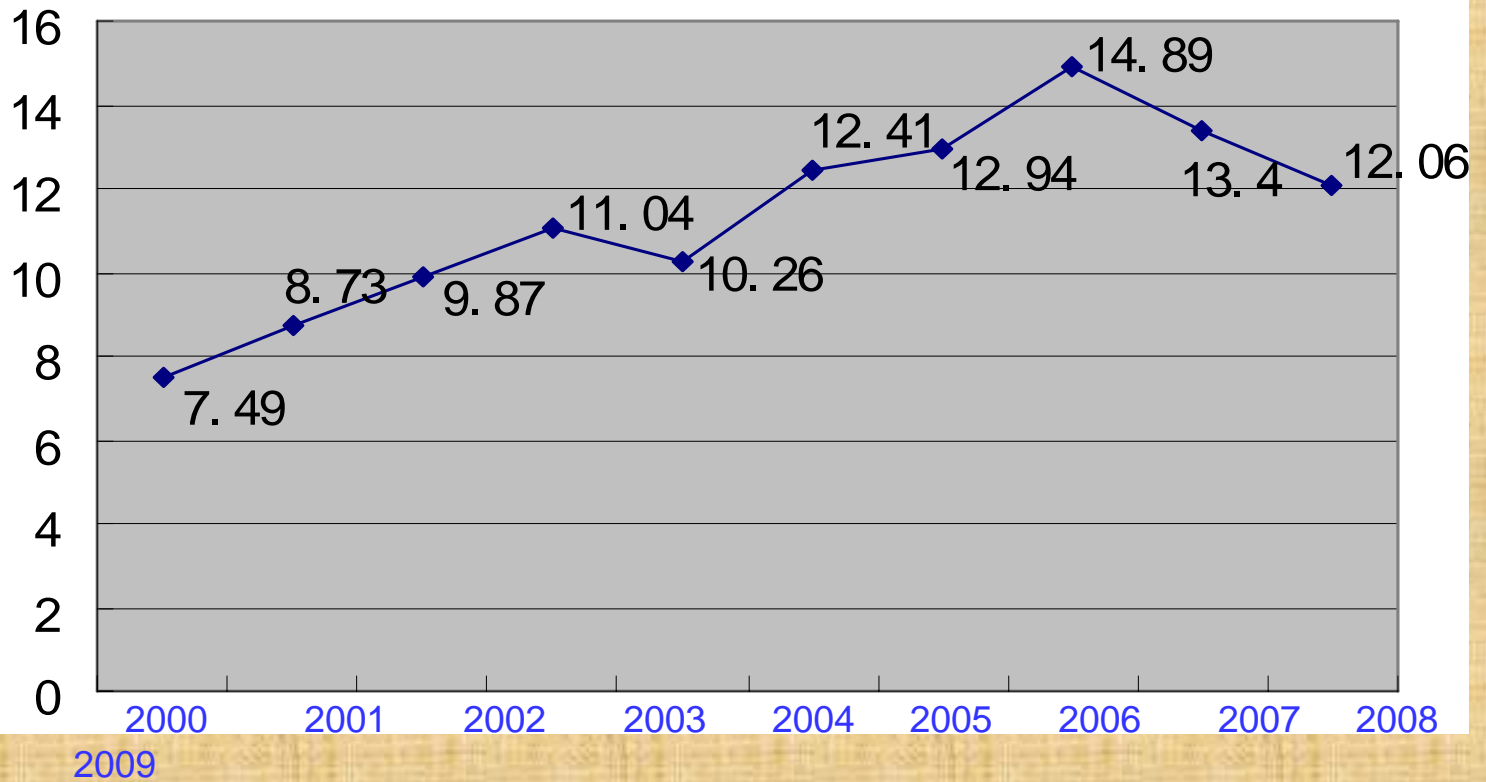
(in tons)



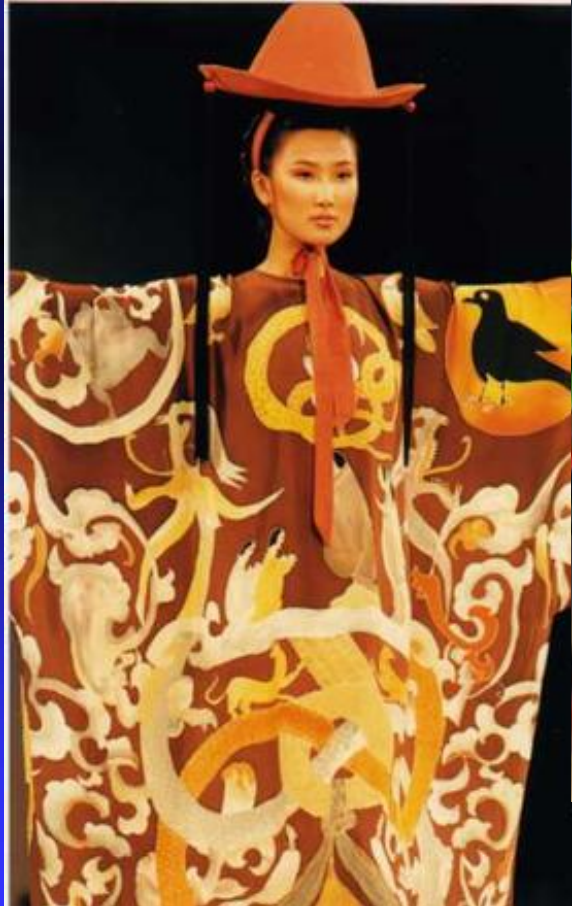
Cocoon Production in China



Raw Silk Production in China



◆ Silk is “Queen of textiles”



other fibers

◈ Silk is the second skin

Silk is composed of 18 amino acids which are close to the human skin. Silk is a natural fiber long revered for its ability to keep the wearer warm when it is cool, and cool when it is warm.



◆ Silk components

Essential Amino Acid

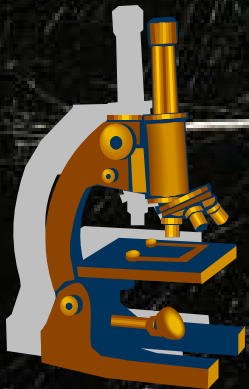
TRYPTOPHAN
LYSINE
METHIONINE
PHENYLALANINE
THREONINE
VALINE
LEUCINE
ISOLEUCINE

Non-Essential Amino Acid

ARGININE
TYROSINE
GLYCINE SERINE
GLUTAMIC ACID
ASPARTIC ACID
TAURINE
CYSTINE
HISTIDINE
PROLINE
ALANINE

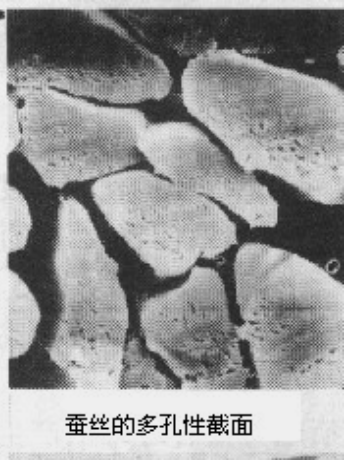
◆ Silk is a green fiber

Silkworm is sensitive to pesticides. Unlike cotton Silk uses very little pesticides in its production. You can set your heart at rest to use silk.

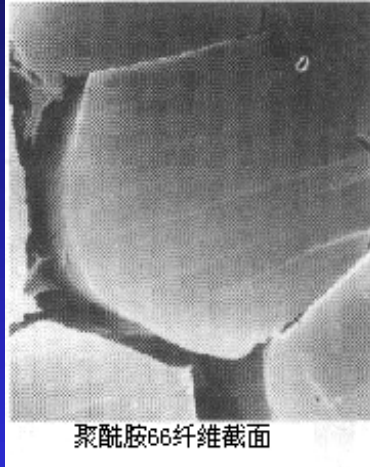


Scientific test showed that pesticide remainder in the cocoon shell, raw silk and fabrics is lower than 0.001mg /kg.

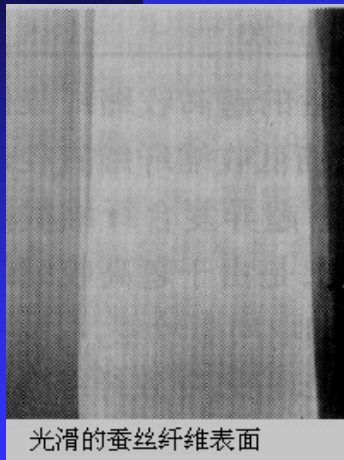
◆ Silk is a healthy fiber



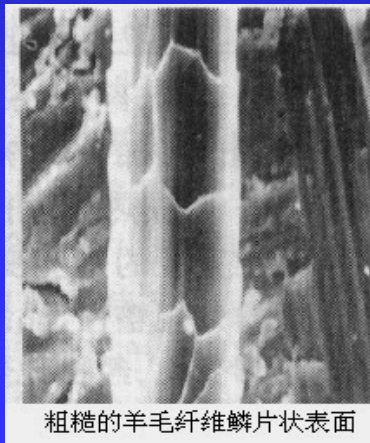
蚕丝的多孔性截面



聚酰胺66纤维截面



光滑的蚕丝纤维表面



粗糙的羊毛纤维鳞片状表面

Silk breathes easily and naturally wicks moisture away from the skin to keep it dry, which is hygienically superior. Silk is actually soothing to the skin diseases and itches.

◆ Silk protect the skin from sun (ultra-violet) irradiation



Silk Umbrella



◆ New silk varieties satisfy the people's demand

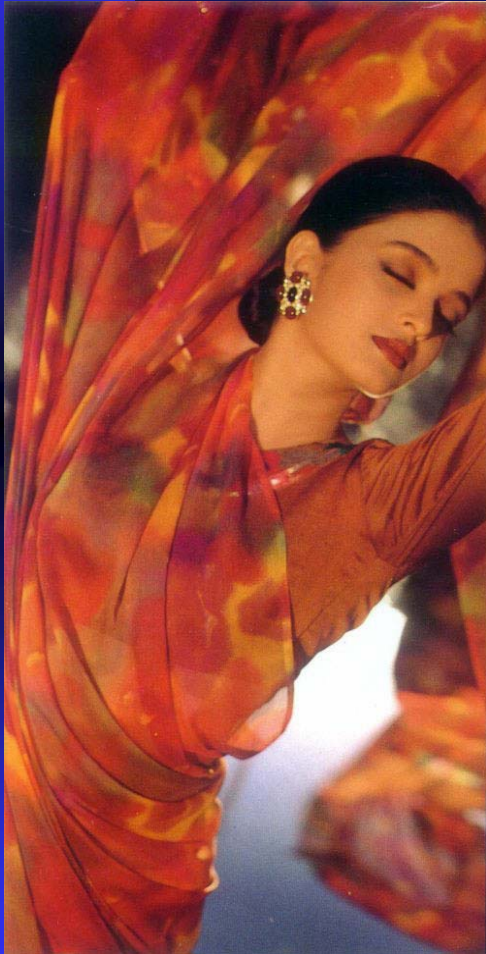
- **Knitting silk** is fine, durable, light and has 75% stretch
- **Wrapping silk**
- **Tri-molting silk** is super fine, it can be 5-6A grade of silk
- **Male silk** can increase output 15-20%.
- **Blended silk**

Chinese Silk Fashion



The Chinese silk fashion is a blend of traditional and modern styles. It is a unique and beautiful expression of Chinese culture. The traditional Chinese silk fashion is a blend of traditional and modern styles. It is a unique and beautiful expression of Chinese culture.

Indian Silk Fashion



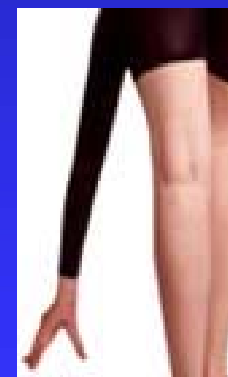
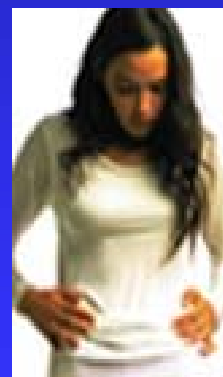
Western Silk Fashion



Silk ties & scarves



Silk is good for underwear



Silk is good for bed use



Silk Quilt



Silk flower



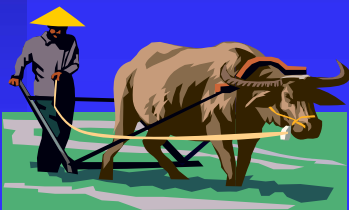
- someone who is allergic or sensitive to real flowers...

The advantage of silk flowers are only too obvious. They are lifelike in their appearance. They will never wilt or turn brown. The variety of silk flowers is endless.

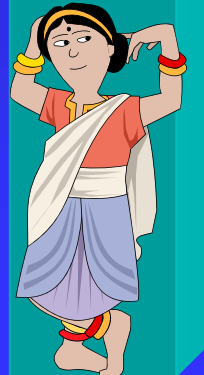


3. Rural Development

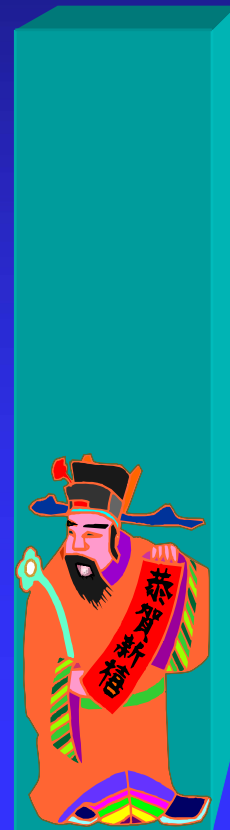
◆ Sericulture is a labour intensive industry. It can employ a lot of farmers so as to avoid them rushing into cities.



5-6
million
Indians



13 million
Chinese



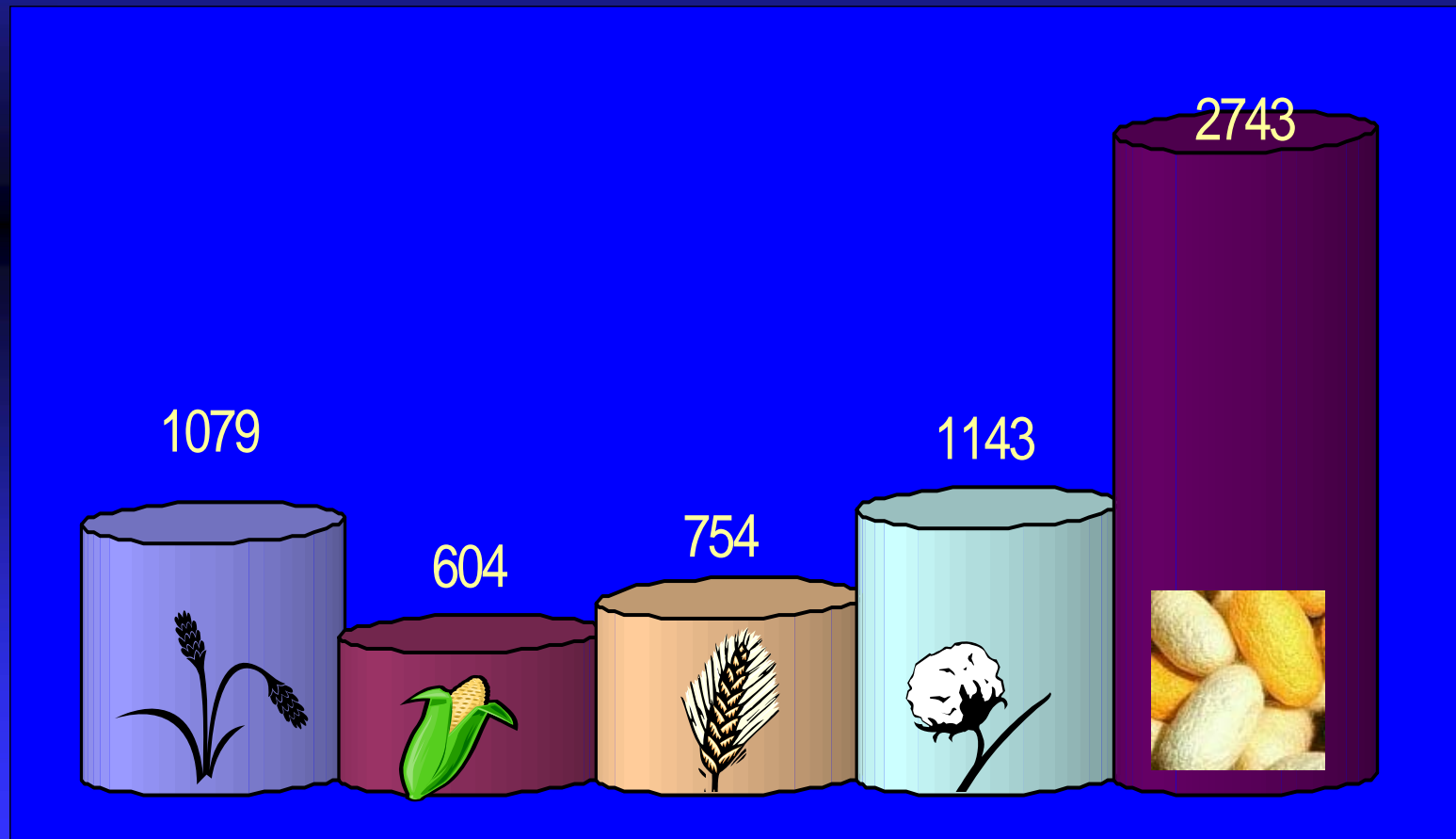
4. Woman Development

◆ Sericulture provides opportunities for women in its full operations such as mulberry cultivation, silkworm rearing, cocoon reeling, silk weaving et al.



5. Low investment and high returns

Income among different crops in China (US\$/ha)



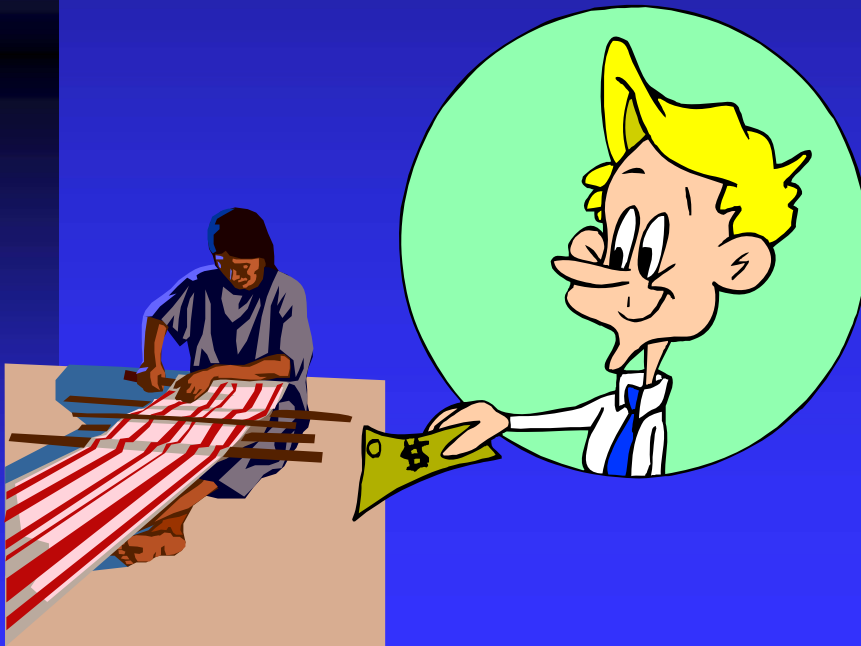
6. Revenue quickly



One crop
needs only
one month.
Farmers can
get cash back
quickly.

7. Transfer money from rich to poor

◈ Silk producing in developing countries but consuming in developed countries



◈ Silk is produced by the farmers but consumed by the rich people

8. Eco-recycle production system

"Rice-Fish Culture in China" edited
by Kenneth T. MacKay, IDRC, 1995,
240 pp, ISBN 0-88936-776-0

四川
四边桑

9. Utilization of Mulberry

➤ **Mulberries** are quite tolerant of drought, pollution and poor soil (pH 4.5-9.0). The trees can grow from cool temperate to warm tropical regions (-30 —40 °C), from dry to moist areas (rainfall 100-2000mm), from sea-level to as high as 3,300 metres.





Mulberry city in Xinye
county (1700year old)



Mulberry separated by
thunder storm but it still
live(1300 year old)

AFRICA

Cote d'Ivoire
Egypt
Ethiopia
Kenya
Madagascar
Tunisia
Tanzania
Uganda

AMERICAS

Argentina
Bolivia
Brazil
Colombia
Costa Rica
Cuba
Dominican
El Salvador
Guatemala
Honduras
Panama
Mexico
Peru
Saint Vincent
United States

ASIA

China
India
Indonesia
Japan
Korea
Kyrgyzstan
Malaysia
Pakistan
Philippines
Syrian
Tajikistan
Turkey
Turkmenistan
Viet Nam
Uzbekistan

EUROPE

Albania
Bulgaria
France
Greece
Italy
Poland
Romania
Spain



Filtrate dust and

harmful air

CO_2

input



Mulberry Tree-Van Gogh (1889)

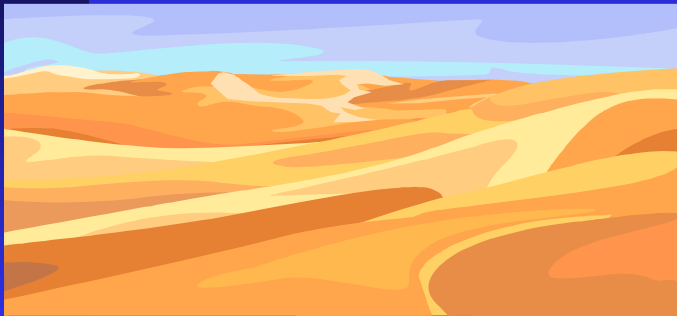
O_2

output

Fix soil and preserve water

➤ Mulberry plantation reduce the run-off of surface soil and soil erosion

In China, the land desertification is very serious problem (2460 km² per year).



Mulberry is a deep rooted perennial plant which can be cultivated as trees or bushes .





Clover 30m

Mulberry 2 m





➤ Mulberry leaves can be used as food not only for silkworm but also for the mammals.

The mulberry leaves are composed of crude protein content from 15% to 28%,



Digestibility and palatability(are ranked high.





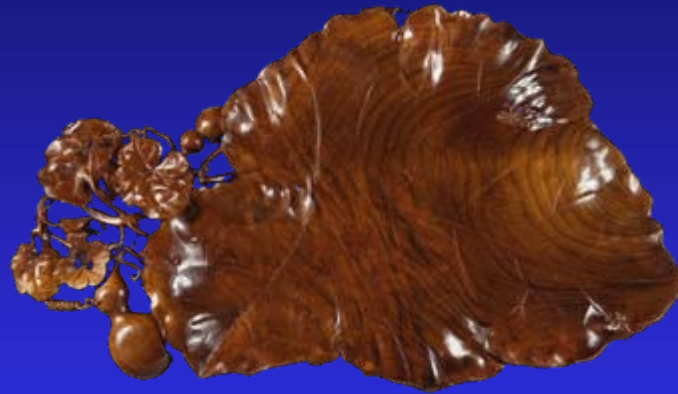
➤ Mulberry berry – a delicious fruit





润州醋系列产品
为中国明球良指定产品
Tao

➤ Mulberry wood



Hockey Stick



1~1.5

0.75~1.0



桑枝板





➤ Skin Whitening Ingredients

MULBERRY EXTRACT

*helps reduce
the creation of
melanin*

*and dark
spot, leaving
your skin fair
and beautiful.*



L'Aromarine Perfume



Whitening
Night Cream

➤ Mulberry leaf



Mulberry Green Herb Product from Natural

Mulberry benefits to control high bp, diabetic sugar level, inflammation, sore throat.

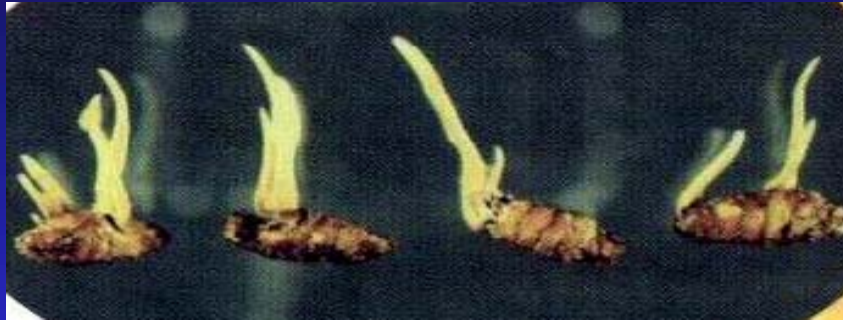


Mulberry leaf &
Chrysanthemum
extract

10. By-products of sericulture

- **Silkworm** as bio-actor through BmNPV to produce foreign proteins such as vaccines, IGF-1 (*Insulin-like Growth Factor 1*), Phytase
- **Mushroom production:** 1kg of dry mulberry braches: 1.8kg fresh Jew's-ear or 1.5kg mushroom.

➤ Producing Cordyceps Sinensis by using pupae



In modern Chinese medicine, Cordyceps Sinensis is used to regulate and tonify the body, cure dizziness and insomnia, spontaneous perspiration, anemia, especially used to treat low resistance of respiratory tract. In addition, it is applicable to impotence and seminal emission, lassitude in the arms and legs, and renal failure. It is also used to treat cough due to yin deficiency of pulmonary tuberculosis, anemia, pain in chest, syndrome characterized by dyspnea, pneumonectasis, neurosis, gastrospasm, gastrotonia, detoxication of meconium, icterus, emesis, anorexia, cerebral arteriosclerosis and chills.

➤ Producing *Cordyceps Sinensis*



➤ Producing amino acid composite



3 tons of
try pupae



1 ton of
amino
acid
compo-
site

◆ Silk Protein Powder

Silk Protein Powder Offers:

Solubility - 100%
High Protein (96.9%)
Very High BV (96)
Less Fat (0)
Less Cholesterol (0)
Less Carbohydrates (0)
Less Sugar (0) Than Any Other Protein.

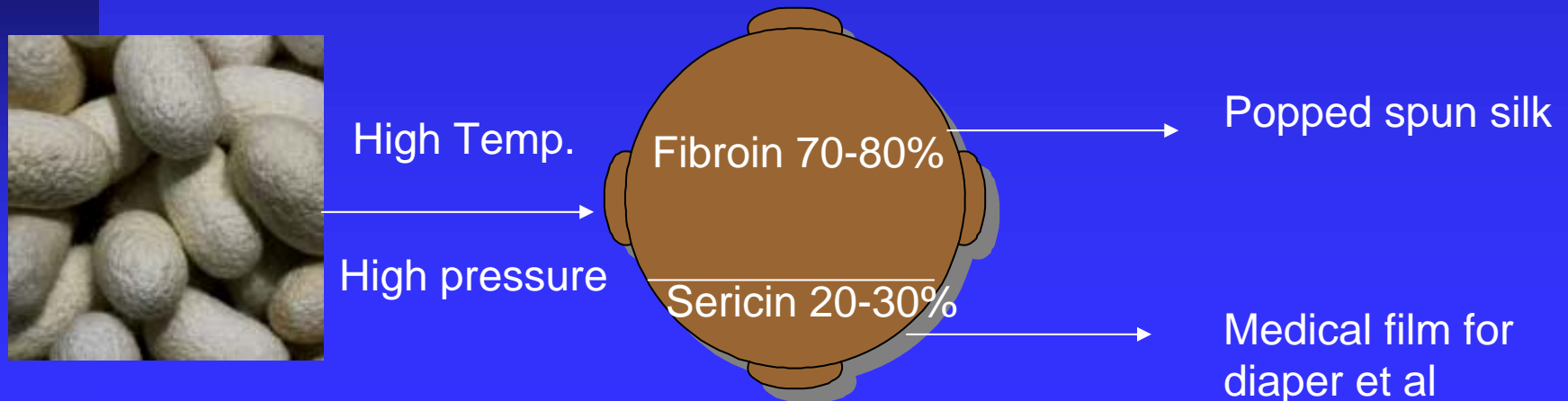


ISO9001/J ISZ9901/BSENISO9001

These statements have not been evaluated by the US Food & Drug Administration. Silk food protein is a food supplement and is not a substitute for any food. It is not intended to diagnose, treat, cure or prevent any disease.



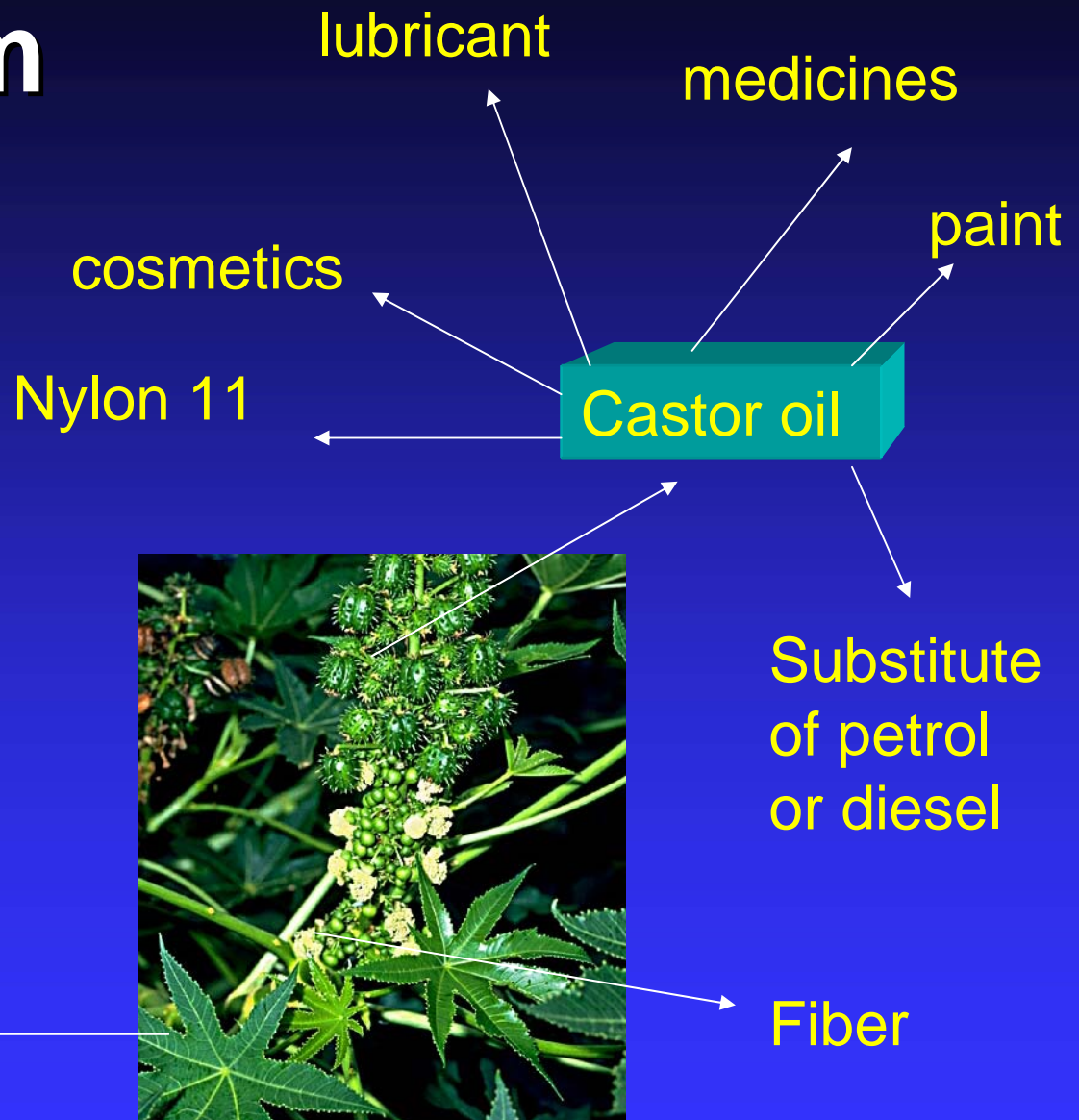
◆ Sericin utilization



◆ Silkworm litter utilization

1. Pillow making: good for insomnia and arthritis
2. Abstract of Copper Chlorophyllin Sodium: widely used as food additives in candy, wine, canned fruits, vegetables and candid fruits.

◆ Eri-worm



Castor oil is classed as a strategic material critical to US defense by the Agricultural Materials Act P.L. 98-284 passed by Congress in 1984.

Thanks

