



THE 9th BACSA INTERNATIONAL CONFERENCE “SERICULTURE PRESERVATION AND REVIVAL-
PROBLEMS AND PROSPECTS” “SERIVIVAL” 2019

Sericulture Development in Guangdong, South China

-----A Successful Model for Sub-/Tropical Sericulture

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BATUMI, GEORGIA

APRIL 7th-12th, 2019

華南農業大學



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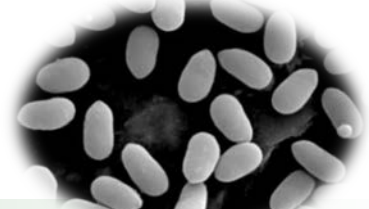


- **Speaker** : Dr.Ji-Ping Liu/Prof.
- **Director**, Regional Sericulture Training Centre for Asia-Pacific, South China Agricultural University , Guangzhou 510642, China
- *Director, Guangdong Renweifeng Health Research Institute, China*
- **30 years of experience** in Sericulture. Presently dealing with Silkworm & Mulberry disease control and Utilization of Sericulture
- **Specialized field**: Sericulture Biotechnology
- **Published over 50 Research papers, authored 4 Books, authorized 21 Chinese patents and 4 PCT**



Contents

- 1. Distribution of Sericulture and its status in China**
- 2. Trends of the Development of Silk Production in China**
- 3. Experience of Guangdong sericulture development**
- 4. PROBLEMS AND PROSPECT**





1.1 History of Sericulture

- China is the cradle of sericulture.
- Production of silk from the moth *Bombyx mori* has been practiced in China since 2,700 B.C.





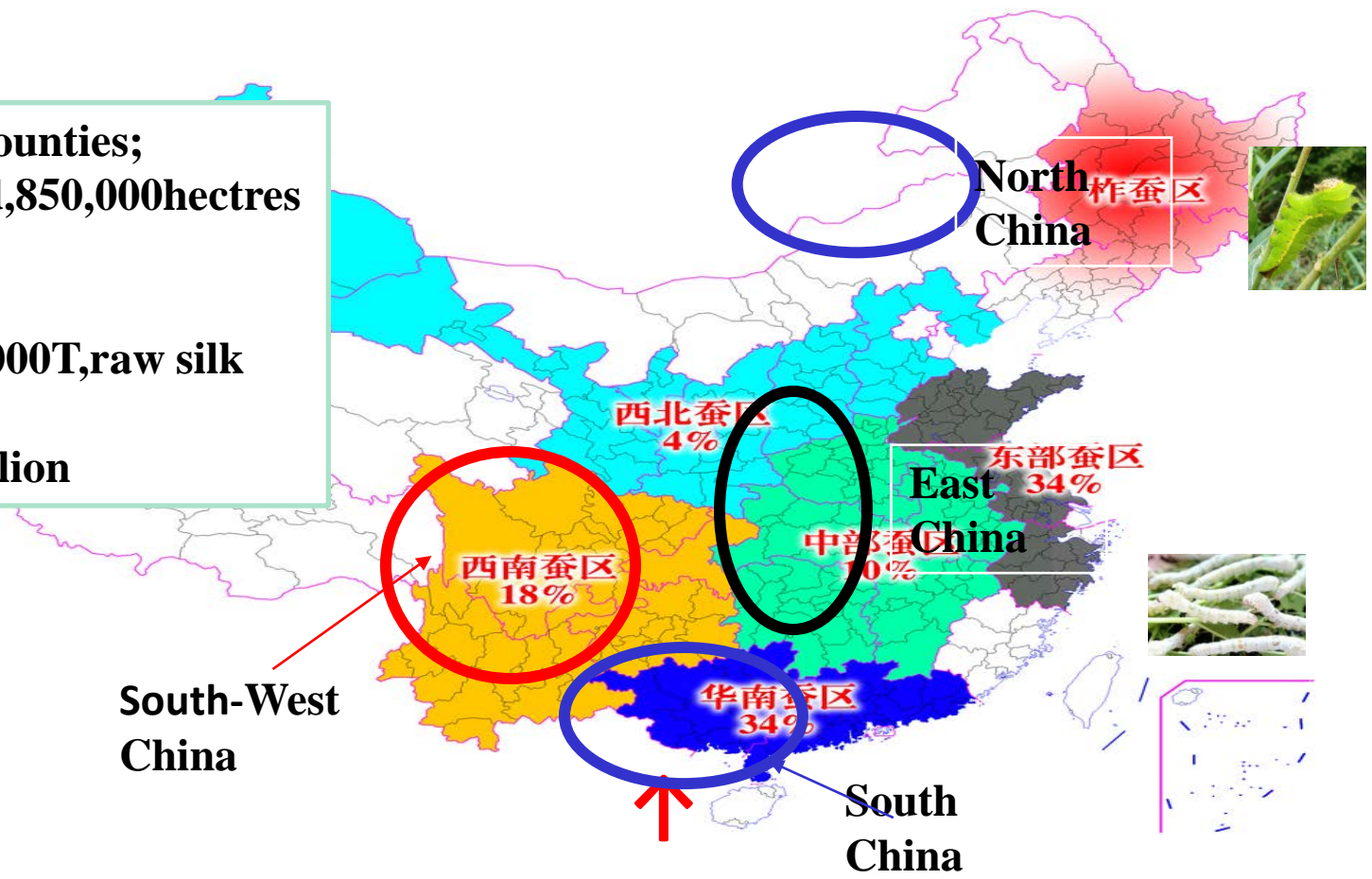
• Cocoon output occupied 51.35% of the total in tropical-subtropical regions in China





1.2 Sericulture distribution in China

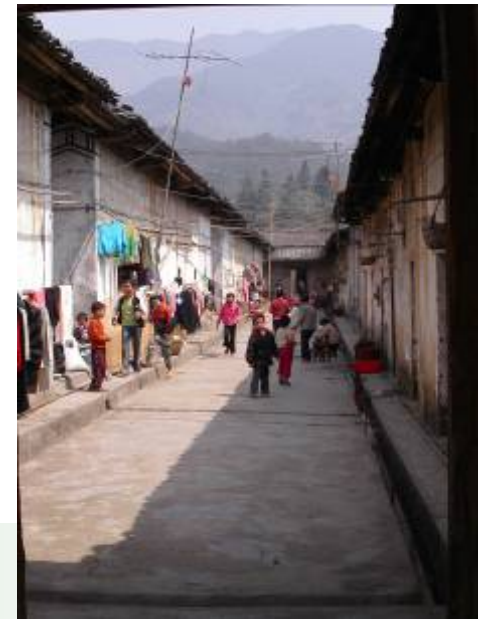
- 28 provinces, 700 counties;
- 8000,000 household, 850,000 hectares mulberry,
- 16000,000 boxes
- Fresh cocoon 600,000T, raw silk 120,000T,
- Income CNY20 billion





Sericulture in China.

is an important tool for rural development. E.g. In the Guangdong province, (South China) alone there are over 10.000 silkworm farmers, mainly women.



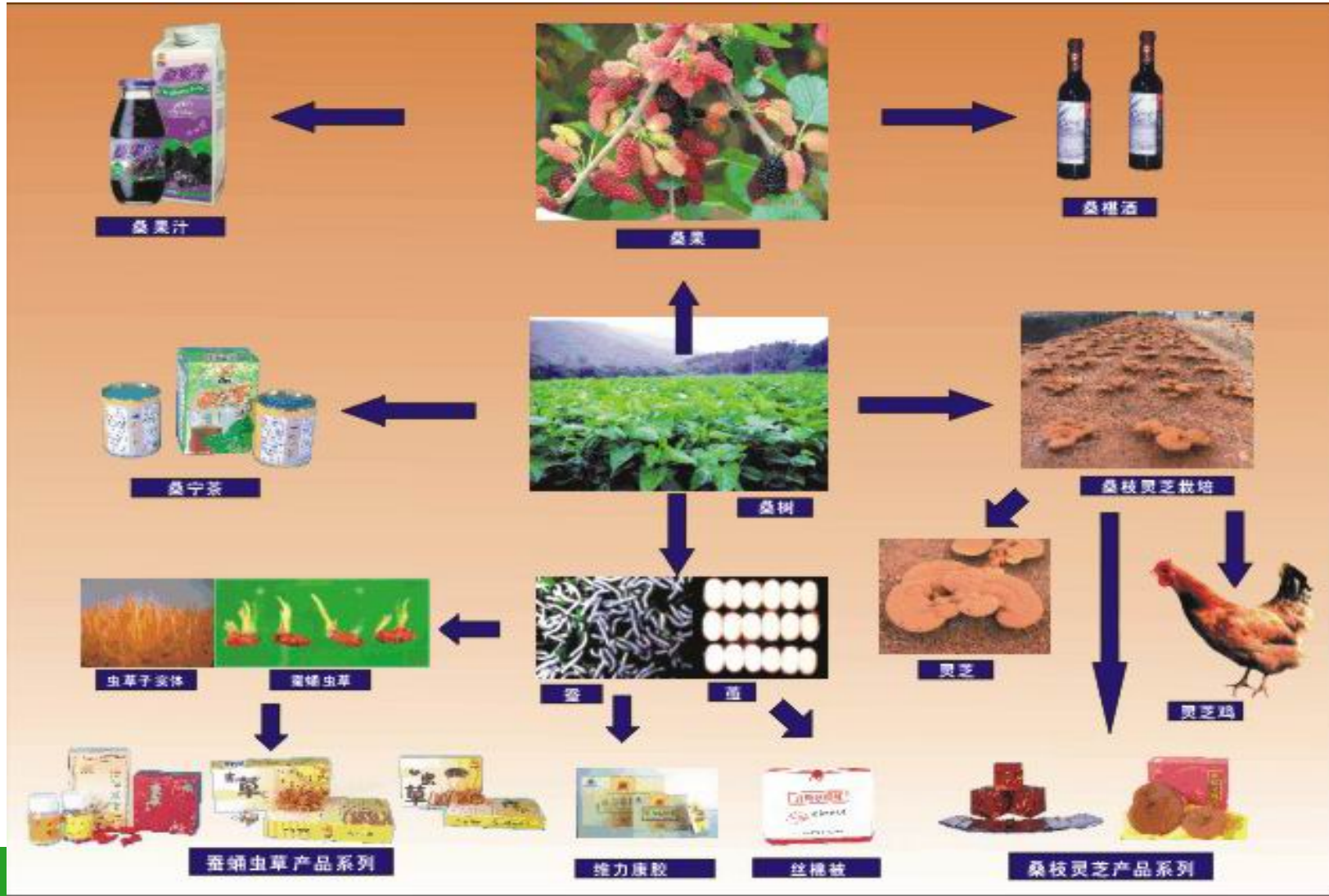


1.3 Purposes of Sericulture

- The silk produced from the mulberry silkworm and its byproducts can be used for many purposes.
 - **Mulberry resource**: mulberry leaves, mulberry branches, mulberry fruit, white mulberry root-bark
 - **Silkworm resource**: young silkworms, silkworm pupa, silkworm moth, silkworm excrement, natural silk



Diverse Utilization Mulberry and silkworm





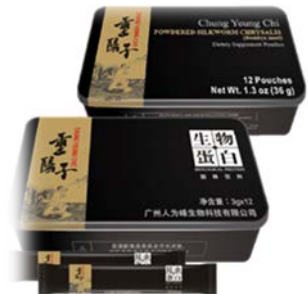
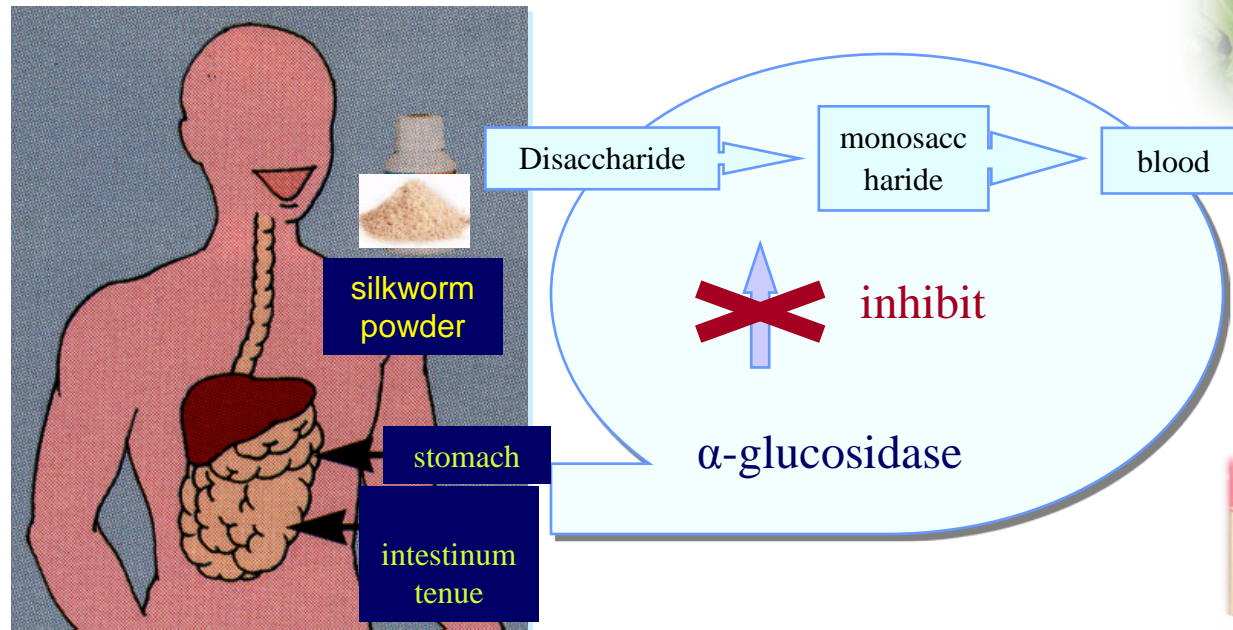
Well done Utilization of Young larva

Treatment of diabetes with silkworm powder



Mechanism

Extract DNJ (1-Deoxynojirimycin) from silkworm powder



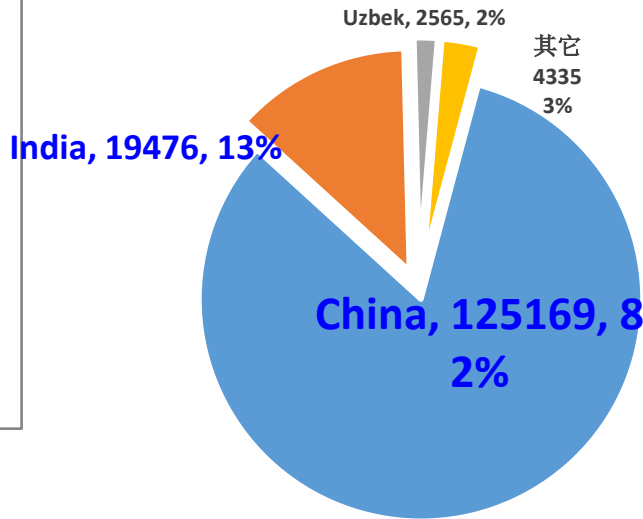
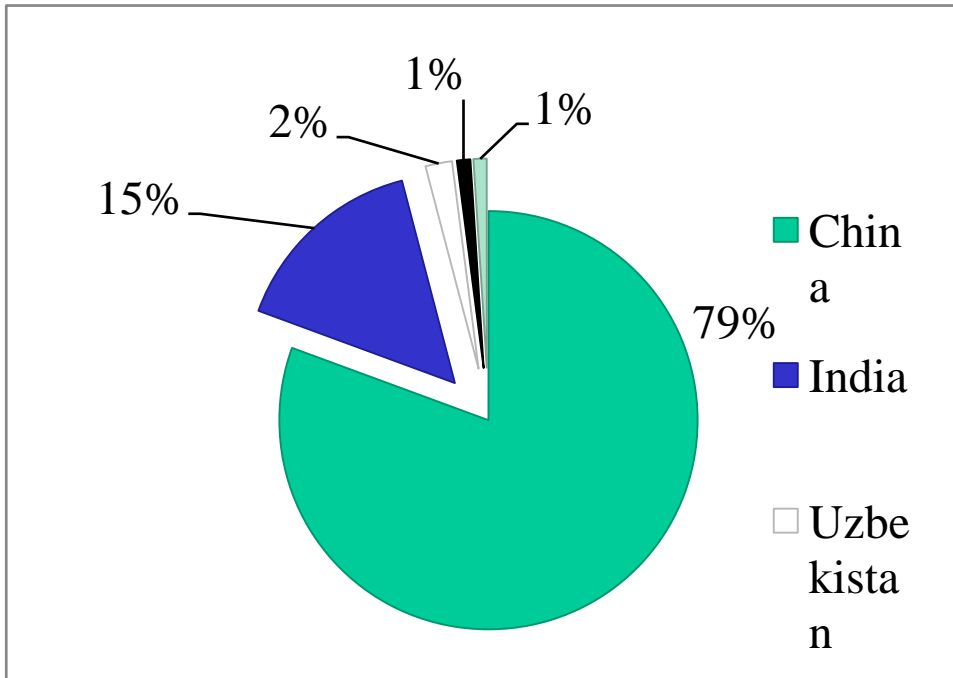


1. 4 Function of Sericulture

- **The silkworm industry plays an active part in the development of the national economy.**
- **It stimulates the rural economy, promotes the overall development of agriculture, forestry, animal husbandry, sideline occupations and fisheries; it boosts the development of local light industry and helps to expand trade.**



World raw silk production in 2010 & 2018 (without wild silk)



Sources: International Silk Association- 2010,2018



Sericulture Changes in China

- **Sericulture in China from 1949 to 1992**
 - Recovering (1949-1954)
 - Developing (1955-1958)
 - Adjustment (1959-1964)
 - Developing (1965-1983)
 - Improving and developing (1984-1995)
 - Adjustment(1996-2002)
 - Adjust to Stable development (2003-now)
- **Sericulture in China in recent years**



Change of mulberry land and eggs production(2007-2017)

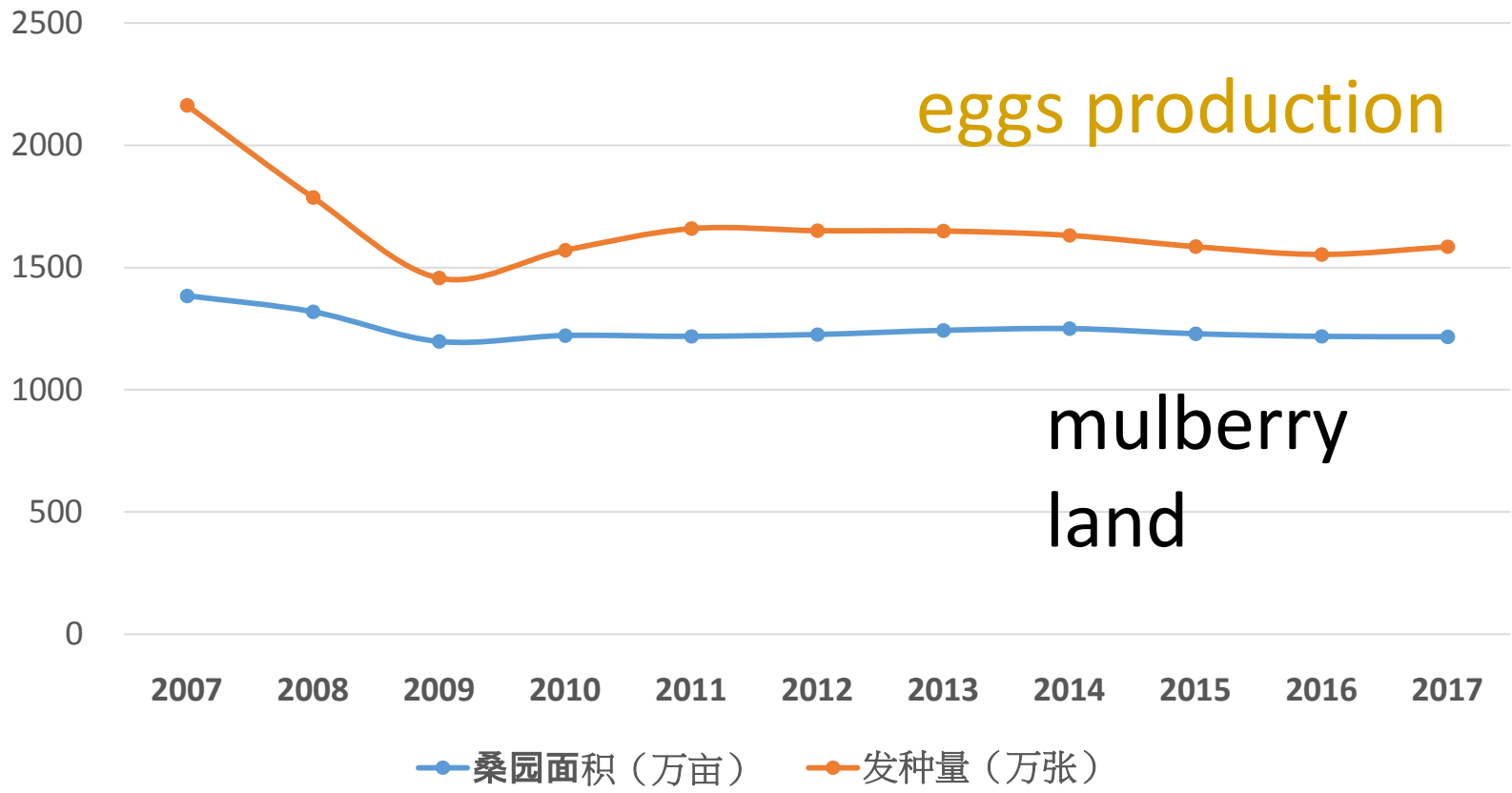
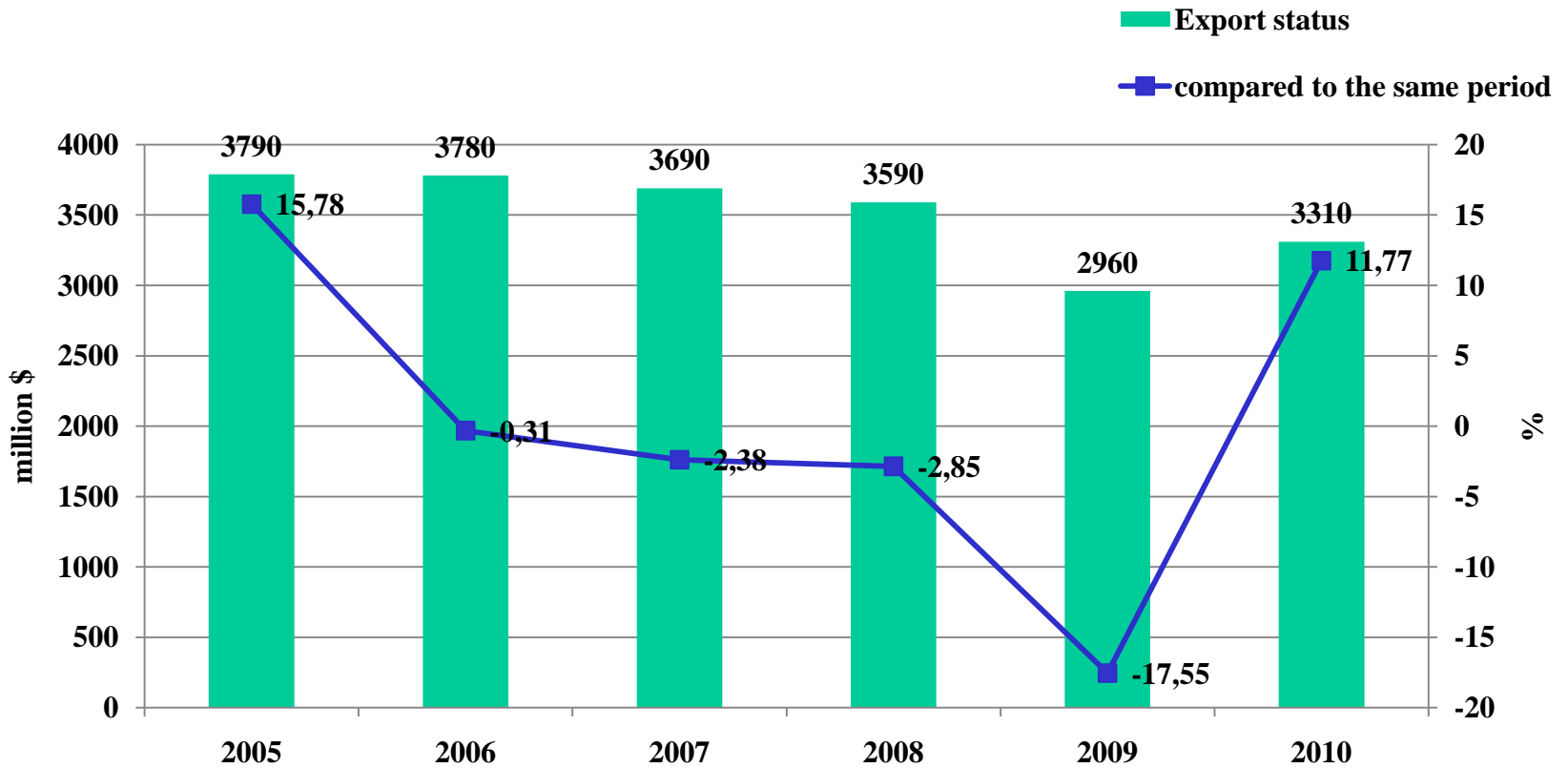




Fig. 2005-2010 silk goods export status



Sources: "The Research Report on China Cocoon Silk Industry Development China Silk Association", Qian Youqing, General Secretary of China Silk Association, and Vice General



Cocoon and raw silk prices increased dramatically.....

Spot transaction price of dried cocoon in China

- ✓ dried cocoon CNY 70-92 /kg in 12 Feb. 2006
- ✓ Dried cocoon CNY 43 /kg , raw silk~ CNY 155/kg ,17 Dec.2008;
- ✓ Dried cocoon CNY78-80 /kg ; raw silk~ CNY 302-312/kg 19,Sept.2011
- ✓ **Fresh Cocoon** CNY 40/kg, **Rawsilk** CNY 340~370/kg April 01,2019,



2 The development of Guangdong sericulture in 2010

Egg production	1,600,000 sheets
Cocoon output	50,000 tons
Raw silk output	3,500 – 4000 tons (4A)
Pure silk fabrics	50,000,000 m
Value of cocoon	CNY 1,000,000,000
Income from Industrial selling	CNY 12,000,000,000
Export earning	USD 2,000,000,000
Total profit	CNY 1,000,000,000



Congratulations, China

(So, no need for
any more aid,
then?)



華南農業大學



Advanced Mulberry Garden



Automatic sprinkler



Mulberry garden in Karst/rock hills





So, no need you any more aid ?



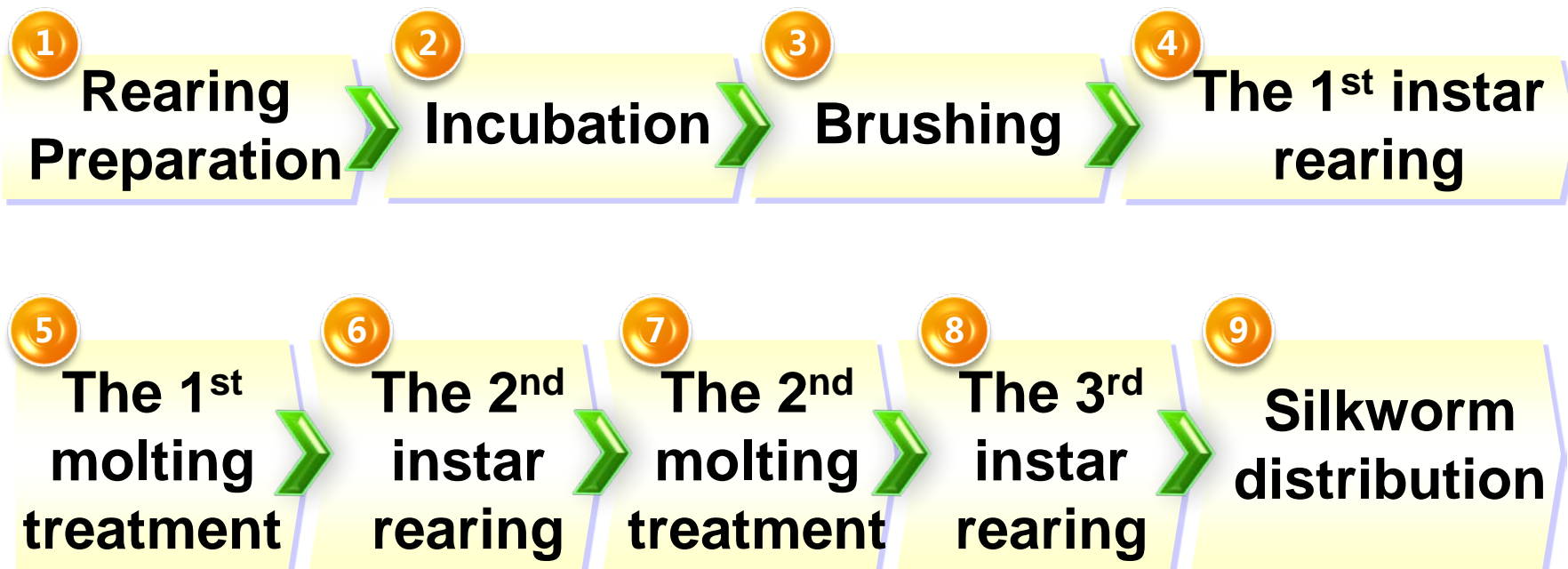
Chinese village in the mountain region, South/West China



horse transportation



Process of management and rearing the young silkworm





Scale young silkworm collaboration-rearing base



Guangxi Yongfu

Xinda Cocoon and Silk Ltd. Company



Distribution silkworm eggs



collaboration of young larvae



Plastic-tent rearing





Silkworms distribution to farmers

- The silkworm should be distributed in the morning or evening.





distribution the big larvae
3rd instar



Rearing the big larvae on the ground



Rearing the big larvae on the ground

Saving labor



labor productivity

2007, 6hrs labor /kilo cocoon

2013, 4hrslabor /kilo cocoon



planting the mulberry in
the karst land region

Purchase the fresh cocoon
from Farmer



3 Experience of Guangdong sericulture development

- ① Age-old tradition
- ② Mulberry breeding and cultivation techniques
- ③ Rearing bivoltine – white- cocoon silkworm for the whole year
- ④ The labour saving rearing techniques
- ⑤ Control the silkworm/mulberry diseases
- ⑥ **Comprehensive/Diverse** Utilization of Sericulture Resources
- ⑦ Model of “Company + Farmers”: The Sericulture Group provides mulberry saplings, silkworm eggs and technical services to the farmers, and collecting cocoons from the farmers.



4. Perpects of sericulture development in Guangdong

- **Stable and high cocoon production**
- **Better quality and low consumption**
- **and for energy saving**
- **and high economic value**
- **==>are our pursuits.**



Intelligent automatic young silkworm rearing machine.





Internet plus (IOT)





Artificial feeds for young silkworm





IOT practising



Real-time monitoring and management system of the incubation Room



Intelligent monitoring system for silkworm egg incubation environment



Innovation technology and products in my Lab

Enterobacter cloacae mori
LAMP visualization rapid detection kit
(Patent application number
201810326627.4)

Mulberry vein banding virus
LAMP visualization rapid detection kit
(one tube type)

Mulberry vein banding virus
LAMP visualization rapid detection kit
(Patent application number
201810552526.9)



Yellow LED Light sericulture
(CN201610048817.5)

Special Solar Insecticidal Lamps
for Mulberry Field
(201710318869.4)

Mulberry leaf pestici
detection c

Multifunctional digital liquid crystal
microscope (ZL201320133424.6)

Multifunctional digital fluorescence
microscope (ZL201420271367.2)

Gas concentration detection system in
culture environment
(ZL201620327334.4)

PebrinePCR detection kit
(ZL200610011374.9)

Bombyx mori typical microsporidium
LAMP detection kit
(ZL201110141178.4)

Pebrine LAMP de
(ZL201310026

Bombyx mori denonucleosis
LAMPdetection kit(CN201310026869.9)

BmCPV LAMP detection kit
(ZL201310215962.4)

Pebrine disease drug "CI
QING" (ZL201410



The application of mobile phone Internet in the sericultural production.

- The protection of the real-time monitoring of silkworm eggs.**
- Rearing temperature and humidity monitoring.**
- Monitoring of air quality in rearing environment.**
- The real-time monitoring of water and fertilizer of mulberry .**
- Mulberry pest monitoring.**
- Real time monitoring the growth and development of silkworm and mulberry.**



国家蚕桑产业技术体系

The Sericulture Industry Technology in China

Supported by China Agriculture Research
System (CARS-18- ZJ0304)



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Taking home information

one belt one road funding from Guangdong Province to support a 7days' training seminar in Regional Sericulture Training Centre for Asia-Pacific, Guangzhou, China **between July 7th to 13th,2019**

participant benefits: **Free** Academic fees, **free** local accommodation, and **free** local transportation, and face to face to share the experience from Chinese sericulture bussinessmen and Scientists, and technicians ,and so on. the details pls

Contact : Prof. Jiping Liu

E-mail: 754589937@qq.com



Cooperation between RSTC and Institutes in Asia-Pacific

- 1. Jointly implement the sericulture project in your country under the international funds**
- 2. Feasibility report and agreement on cooperation**
- 3. Training for trainers and training for farmers**
- 4. Demonstration farm**
- 5. Supply of silkworm eggs and Mulberry seeds/seedlings to the farmers**
- 6. Technical extension**
- 7. Cocoon and silk processing**

