

**Asian and Pacific Workshop on  
Whole-Process Mechanization of  
Potato Production**

**Experimental Study on Potato Harvester  
with Integrated Type of  
Vibrated Digging and Separating**

**Professor *Song Jiannong***  
**CHINA AGRICULTURAL UNIVERSITY**

27-28 June 2016, Kunming, China



CSAM



# Experimental Study on the new integrated vibratory digging-separating potato harvester



- **Content:**

- 1, Study on the potato planting mode and the distribution of potato in the field**
- 2, The condition and problems of current potato harvester in the market**
- 3, The structure and working principle of the new integrated vibratory digging-separating potato harvester**
- 4, The effect of the new potato harvester in the field**
- 5, Conclusion**



# Study on the potato planting mode and the distribution of potato in the field

- Focus on one season ridge planting mode in north China



# Study on the potato planting mode and the distribution of potato in the field

- Focus on one season ridge planting mode in north China



**Ridge**

**Spacing: 80-100cm**

**Height: 25-30cm**



**Distribution of potato**

**Depth: 15-25cm**

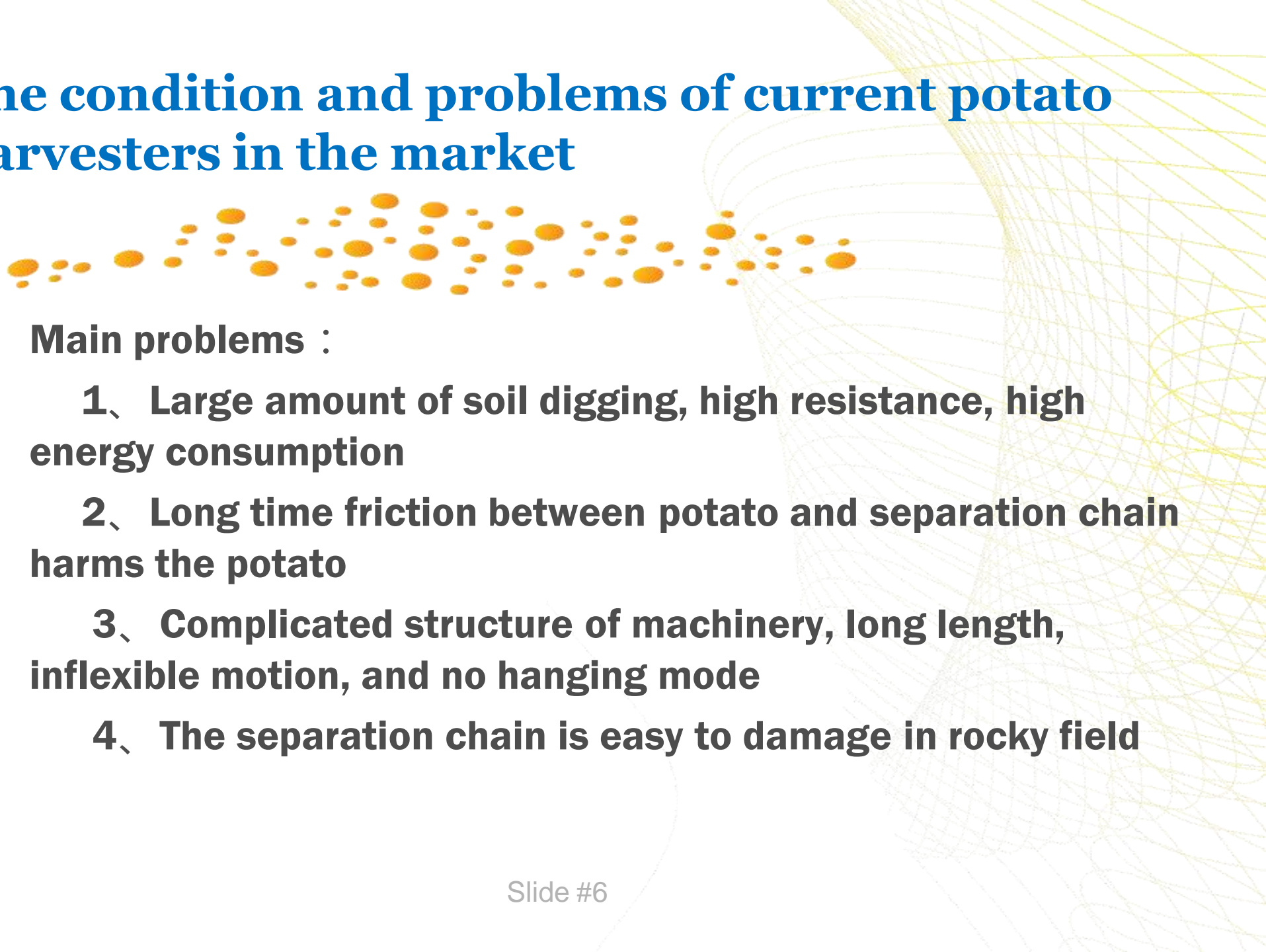
**Width: 45-60cm**



# The condition and problems of current potato harvesters in the market



# The condition and problems of current potato harvesters in the market

- 
- **Main problems :**
  - **1、 Large amount of soil digging, high resistance, high energy consumption**
  - **2、 Long time friction between potato and separation chain harms the potato**
  - **3、 Complicated structure of machinery, long length, inflexible motion, and no hanging mode**
  - **4、 The separation chain is easy to damage in rocky field**



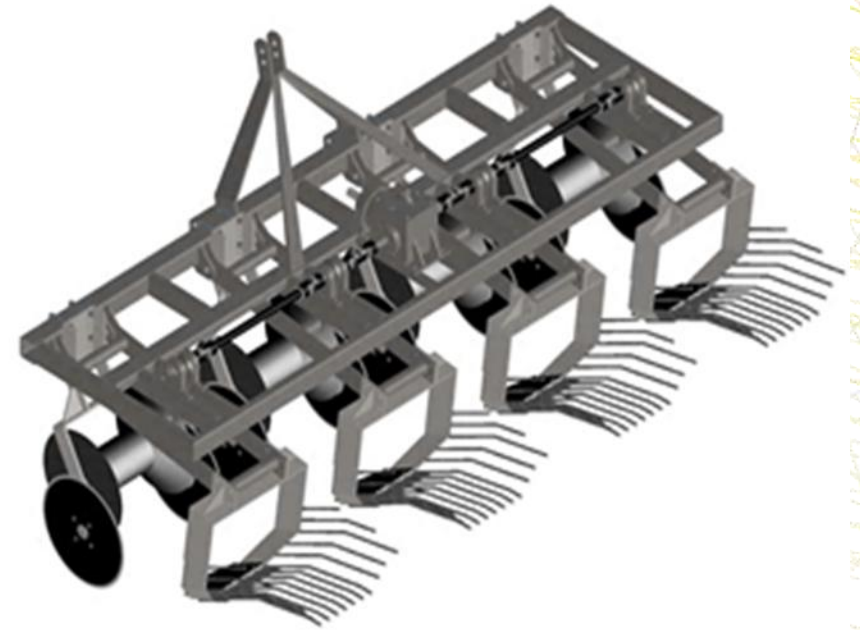
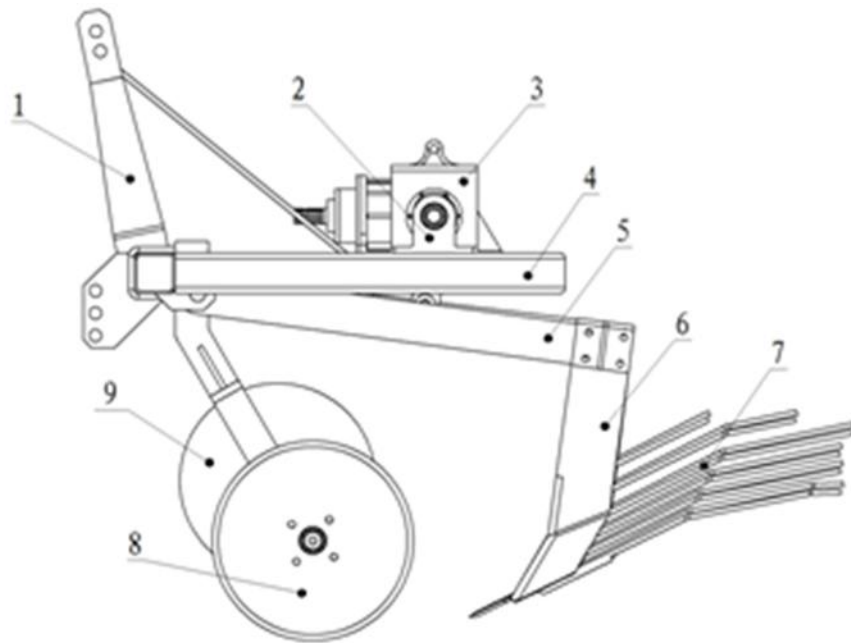
# The structure and working principle of the new vibratory integrated digging-separating potato harvester

A decorative graphic consisting of a horizontal line of orange dots of varying sizes, transitioning into a yellow wireframe mesh that extends across the right side of the slide.

- **1、 Issues addressed:**
- **Studied the working principle of digging shovel , solved the problem of high resistance force ,**
- **Lowered the resistance and energy consumption of the harvester components**
- **Developed the technology of potato-soil separation and potato vine separation**
- **Solved the issues of breaking skin and increased the quality of potato harvesting**

# The structure and working principle of the new vibratory integrated digging-separating potato harvester

## 2、 The structure and working principle of whole machine





# The structure and working principle of the new vibratory integrated digging-separating potato harvester

- **The features:**
- **The vibratory obtrapezoid digging shovel, greatly reduced the amount of soil digging and tillage resistance up to 30%**
- **The combination of potato-soil separation grating and the vibratory shovel forms the no-sieve separation device, simplifies the separation mechanism, reduces the potato motion distance and time on the separating sieve, and reduces the rate of injury.**

# The effect of the new potato harvester in the field





# The effect of the new potato harvester in the field

## Main technical indexes :

Power : 47.8kw

Working rows : 4

Loss rate : 2.0%

Obvious rate : 98%

Leakage rate: 0.13% ;

Damage rate: 0.06% ;

Producing efficiency: 0.55hm<sup>2</sup>/h





GRIMME GTI700马铃薯收获机



4TSW-490型马铃薯收获机



中机美诺1600A型马铃薯收获机

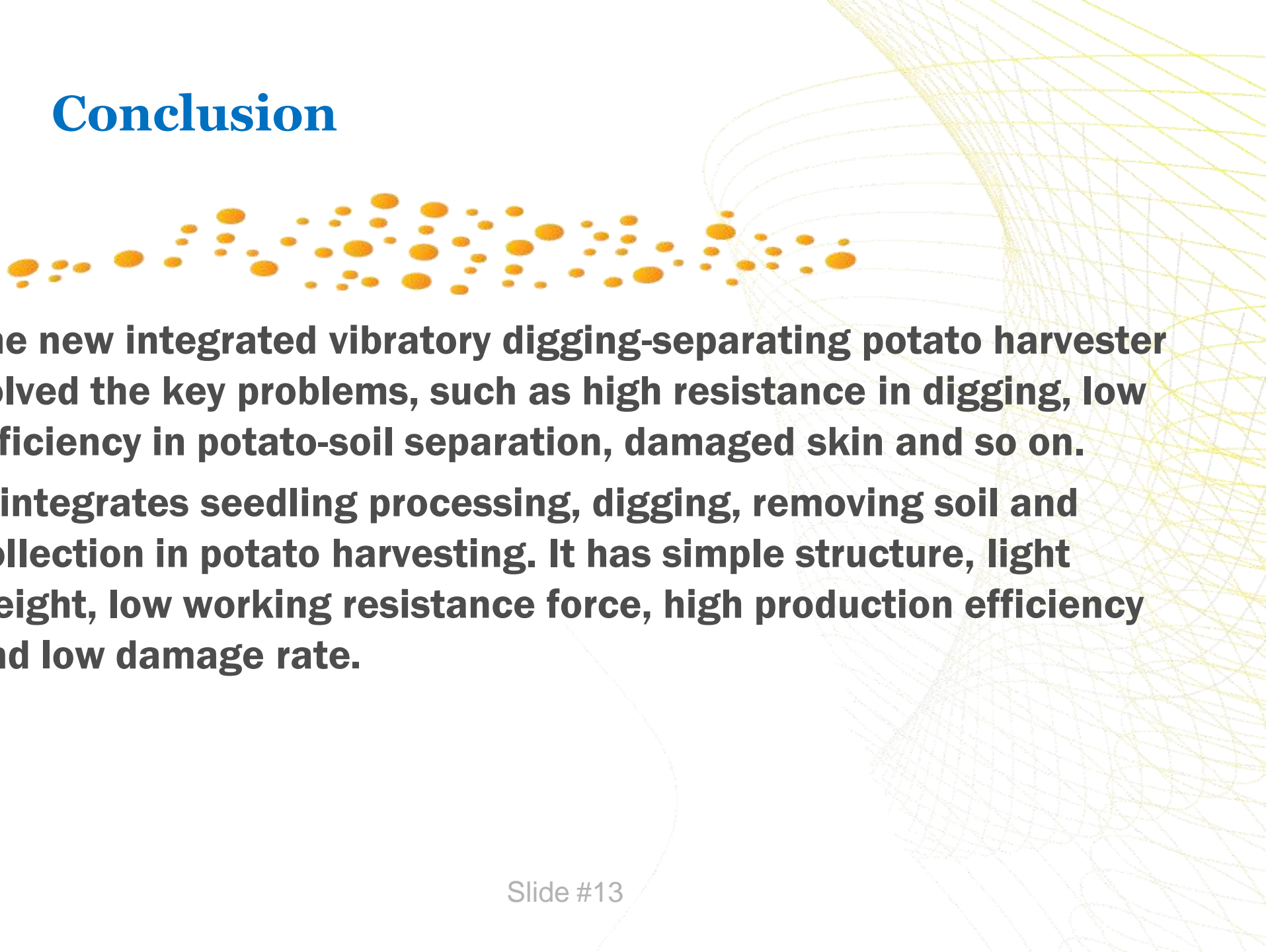


迪沃夫马铃薯联合收获机





# Conclusion

A decorative graphic consisting of a horizontal line of orange dots of varying sizes, and a background of a yellow grid pattern that tapers and curves towards the right side of the slide.

**The new integrated vibratory digging-separating potato harvester solved the key problems, such as high resistance in digging, low efficiency in potato-soil separation, damaged skin and so on. It integrates seedling processing, digging, removing soil and collection in potato harvesting. It has simple structure, light weight, low working resistance force, high production efficiency and low damage rate.**

# Contacts

## Department of Agriculture Engineering China Agricultural University

**Song Jiannong** Professor

---

Add: Box 50, China Agr. University  
Qing Hua Dong Lu Haidian District  
Beijing China  
Postcode: 100083  
E-mail: [songjn@cau.edu.cn](mailto:songjn@cau.edu.cn)

Tel: (+86)010-62737502(O)  
(+86)010-62737064(H)  
Fax: (+86)010-62737064  
Mobile: (+86)13801051532



# The End

## Thanks For Your Attention

