

Chingchai Lohawatanakul



**Charoen Pokphand Foods
Public Co., Ltd.
Thailand**



Dr. Chingchai Lohawatanakul is President and Vice Chairman of Charoen Pokphand Group's Agro-Industry and Foods Business. He is also Executive Committee Chairman of Charoen Pokphand Foods Public Co. Ltd. and its past president, V.P. and CEO. He has a master's degree in microbiology and a bachelor's degree in agricultural chemistry from Arizona State University, as well as honorary doctorates from Kasetsart University, Prince of Songkhla University and Maejo University.





Shrimp Farming: A Sleepless Business

Dr. Chingchai Lohawatanakul

History Of Modern Shrimp Farming



Seeded in Japan



NSRDI, Busan

P. japonicus



First Technological Breakthroughs In Japan



- Shrimp farming started in Japan where Dr. Fujinaga (right) first developed techniques for culture in captivity.
- During the late 1960' s, his techniques were transferred to Taiwan through Dr. Liao (left).



Grew-Up in Taiwan



P. *monodon*



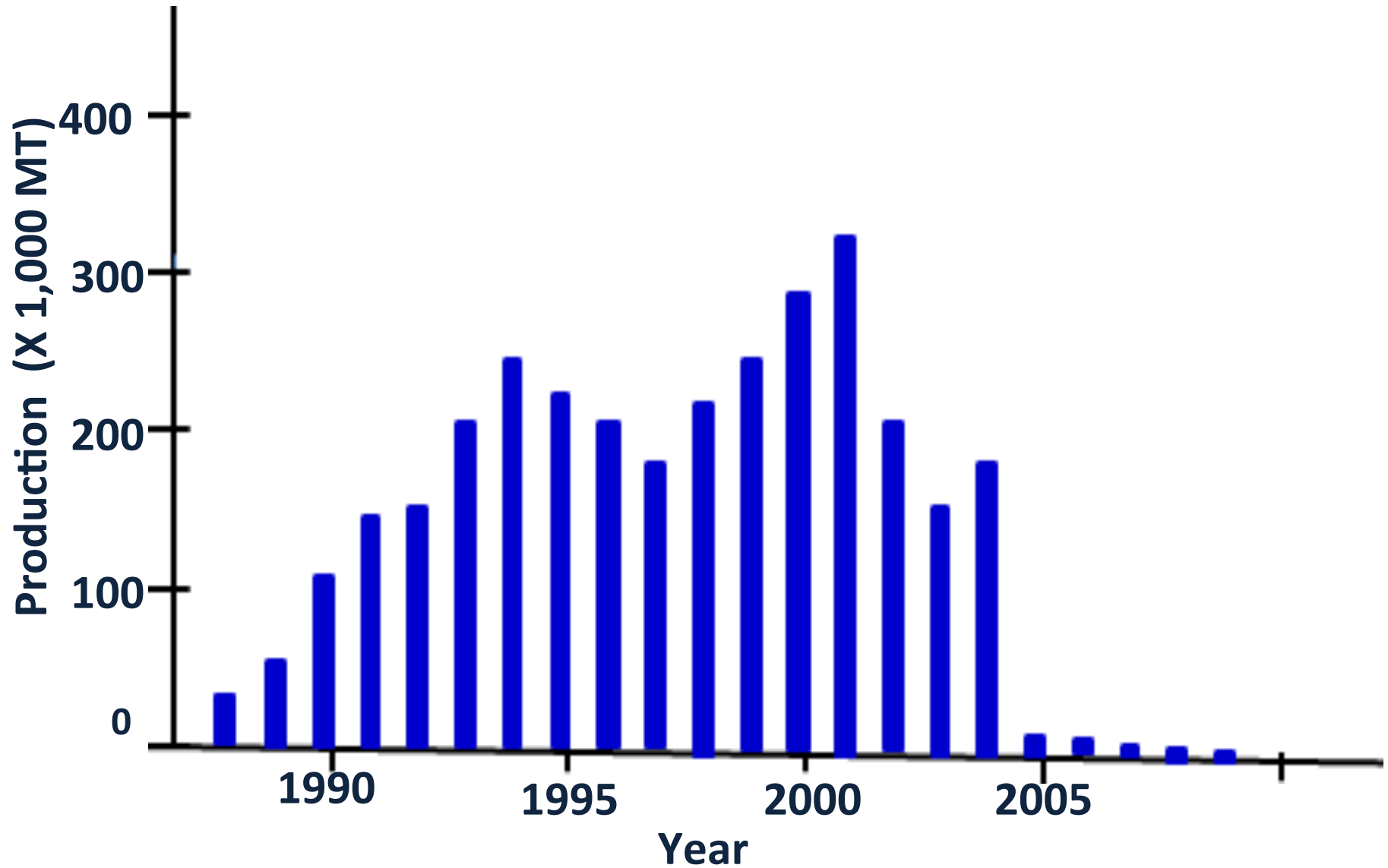
Aging in South East Asia



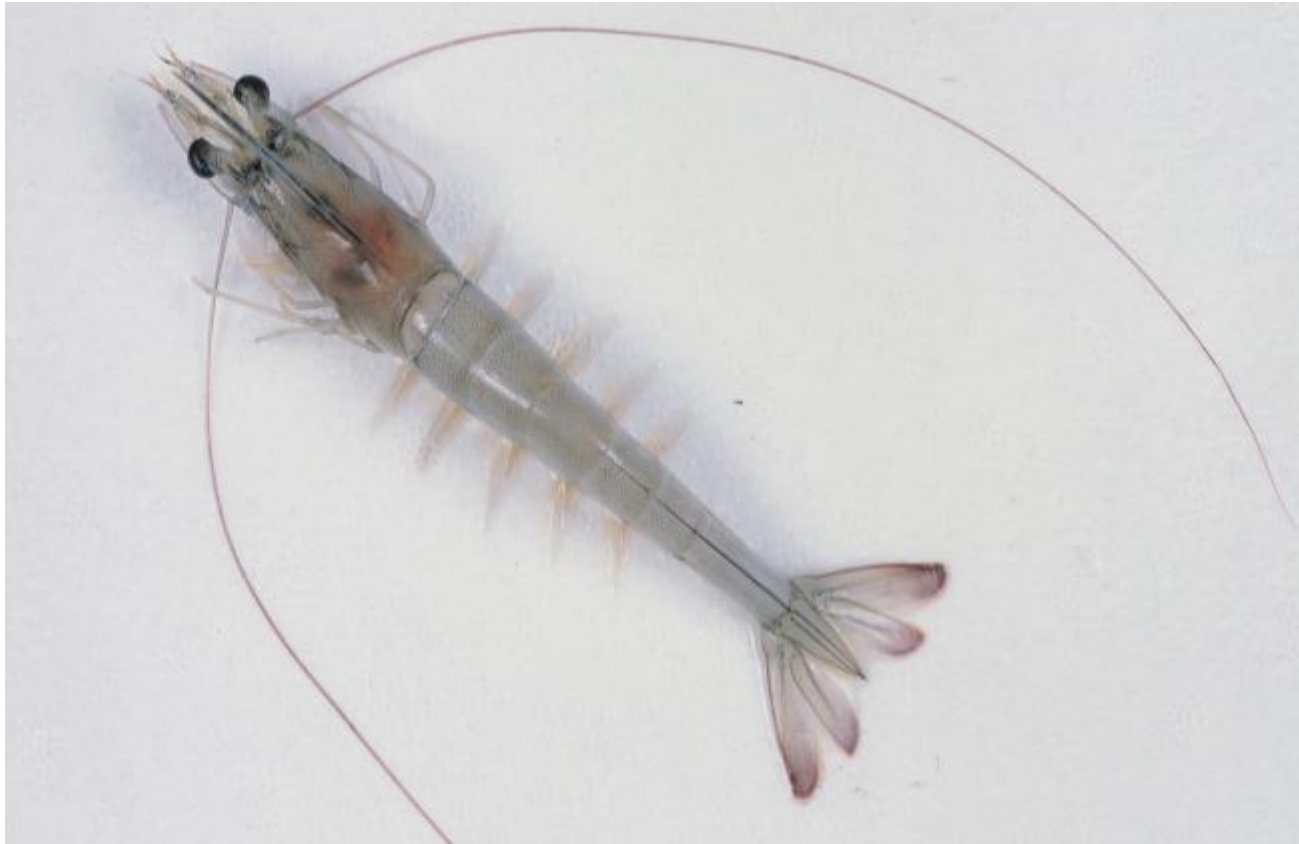
P. monodon



Thai Black Tiger Production



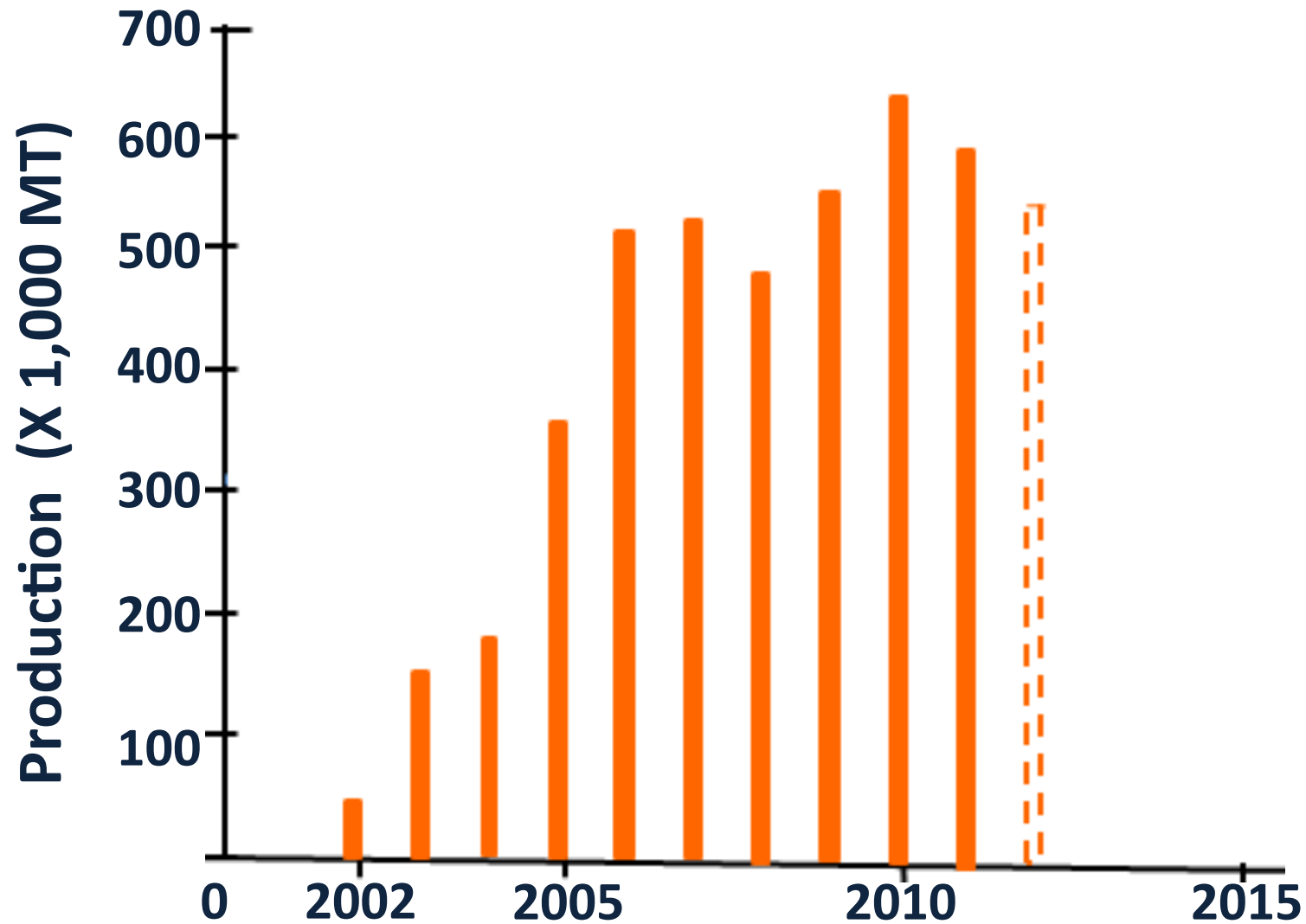
The Immigrant



L. vannamei



Thai Vannamei Production



Sustainability

- Genetics
- Nutritions
- Management & Disease Control
- Environment
 - Industrial Pollution
 - Fossil-Fuel & CO₂ Emission



Map of Europe

North
Sea

Rhine River





Human Addicted To Fossil-Fuel

1. Biological CO₂ Emission

$$2,000 \xrightarrow{\div 5} 400 \xrightarrow[\div 1000]{\times 1.5} 0.60 \text{ Kg/Cap/Day}$$

2. Life-Style CO₂ Emission *

$$8 \times 10^{12} \xrightarrow[\div 365]{\div 7 \times 10^9} 3.13 \xrightarrow[\times 50\%]{\times 3.67} 5.74 \xrightarrow{\div 40\%} 14.35 \text{ Kg/Cap/Day}$$

3. Comparison

$$\frac{0.60}{0.6 + 14.35} \times 100\% = 4\%$$

* World Coal Production 2010 = 7,984,900,000 Tons (www.eia.gov)

MY WISH

To hand over a **CLEAN EARTH**
to our next generation

1. To Protect River & Sea Water Against Pollution

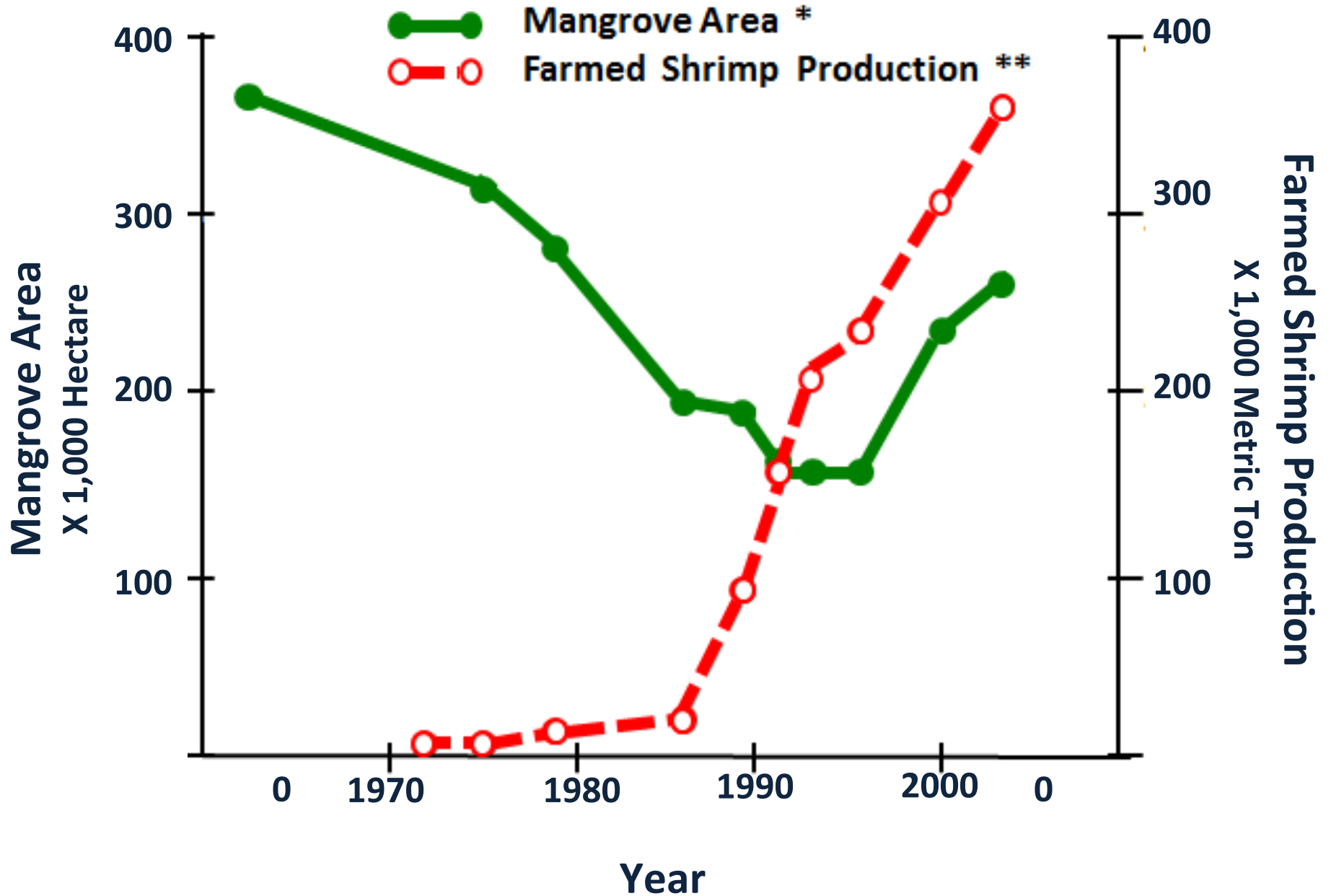
Learn from International Commission for the Protection of Rhine [ICPR] Against Pollution.

2. Phase Out Fossil-Fuel in 30 Years

Tax heavily on use of fossil-fuel and finance the development of clean energy.



MANGROVE ISSUE



Trade & Non-Trade Barriers

1. GSP
2. AD
3. GMO
4. Microbial Criteria
5. Drug Residue



GMO

1. Mutation

2. Gene Insert



DRUG RESIDUE

1. Ethoxyquin

Japan

2012

2. Zero – Tolerance

EU

2001



Chloramphenicol

Isolated from soil microorganism

Streptomyces venezuelae

In 1948



Asean Aquaculture Federation

BEIJING
2003



Thank You!

