

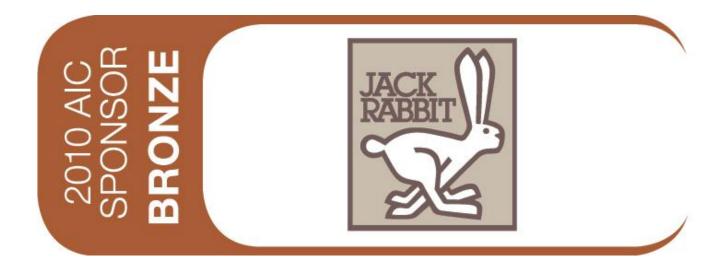
East Meets West: Bridging the Cultures with Innovative Food Solutions

Dr. Sharon Shoemaker + Dr. Karen Lapsley, Moderators



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Refreshment Sponsor







East Meets West: Bridging the Cultures with Innovative Food/Almond Solutions

Presenters:

Dr. Roger Clemens, USC School of Pharmacy

Lawrence Allen, Senior China business expert and author of Chocolate Fortunes: The Battle for the Hears, Minds and Wallets of China's Consumers

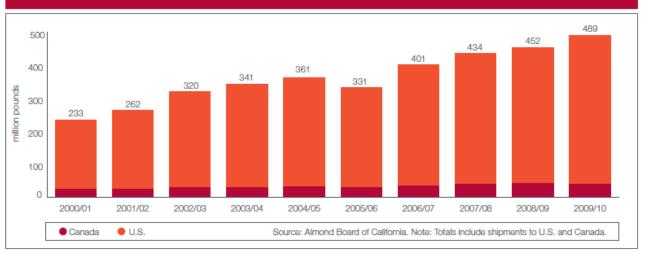
Dr. Sharon Shoemaker, UC Davis

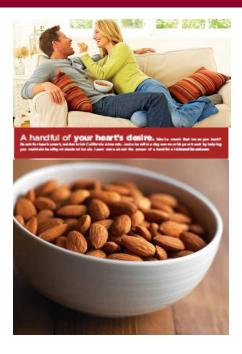


USA market highlights



NORTH AMERICAN ALMOND SHIPMENTS CROP YEAR 2000/01-2009/10









2005: Almonds Added to USDA MyPyramid

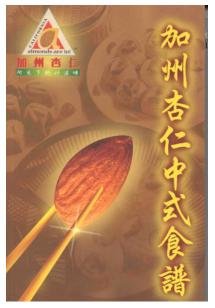


Portion Control Tin First Suggested by Subject in ABC Study



China market highlights

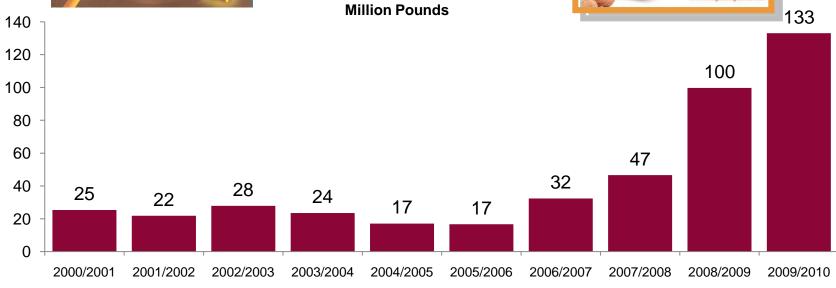






China 10 Years
Million Pounds







China - growing economic sectors



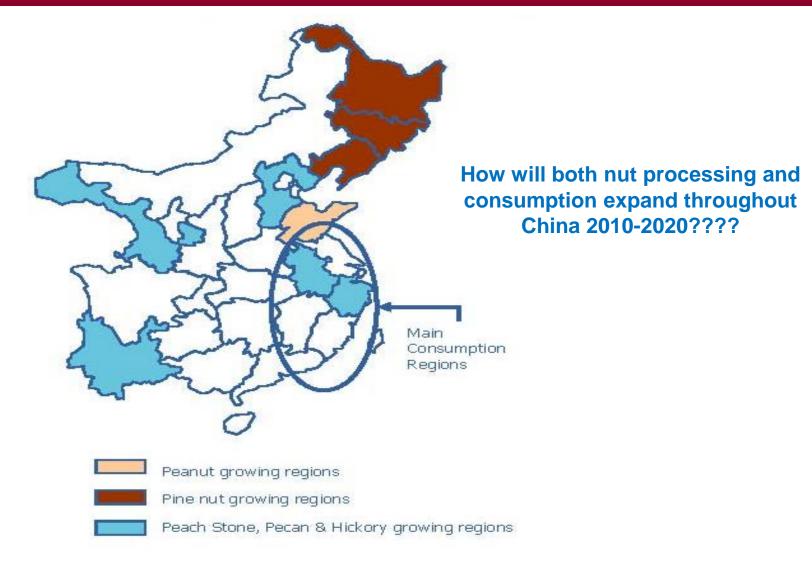
Industries in which China ranks #1 or #2 in the global market context

	China Percentage of Global Market	China Market Rank in Global Market
Automotive	~20%	No. 1
Machine Tool	22%	No. 1
Domestic Appliance & Components	~20-30%	No. 1
Semi-conductor	~30%	No. 1
Elevator	~40%	No. 1
Construction	~12%	No. 2
Food Retail	~10%	No. 2



China - nut growing regions historical perspective

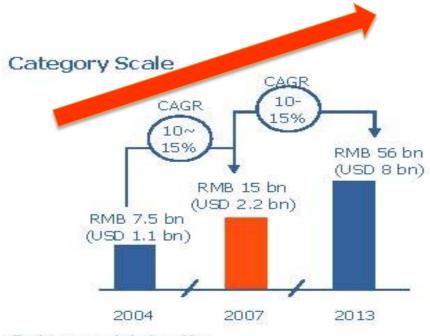




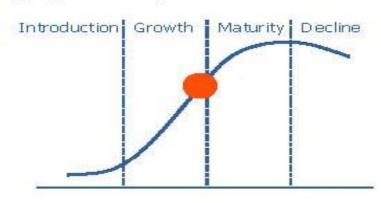


China - Snack Category Growth





Category Maturity



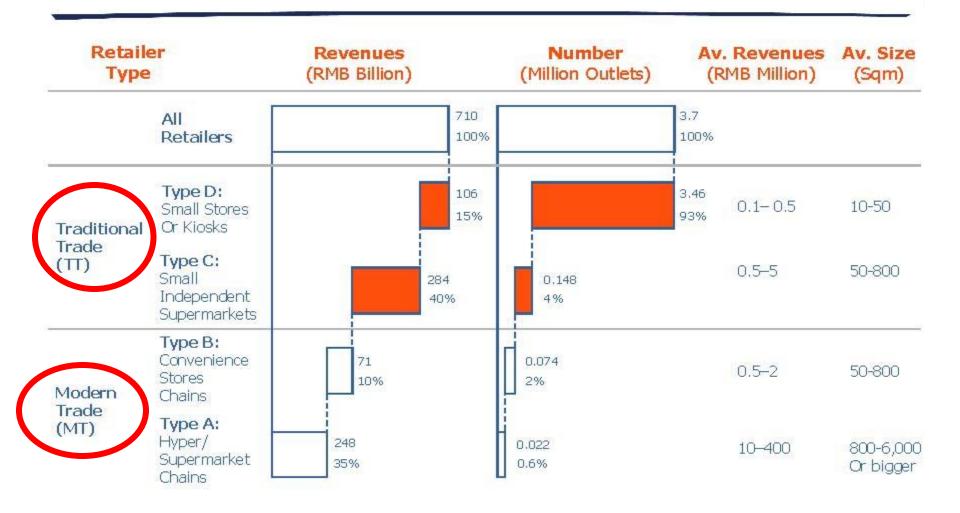


China – snack distribution is evolving



Distribution: a major challenge

'Traditional Trade' accounts for > 50% of retail revenues





onto the speakers!!



Food Industry Priorities in the USA and China

Dr. Roger Clemens, USC School of Pharmacy





Objectives



- Assess and compare food science & technology education between USA and China
- Discuss the food science-related challenges to entering the China market
- Identify USA-China partnership opportunities in academe and food industry



IFT Membership



- Founded in 1939
- More than 18,000 members worldwide
- 18% of IFT members are international in more than 100 countries
- 59 Sections and Sub-Sections, 28 Divisions
- Members come from industry (81%), academia (15%), and government (4%)





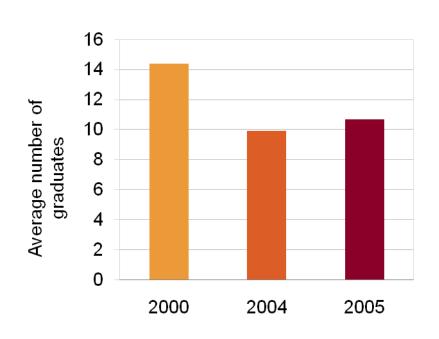
Food Science & Technology - USA



IFT on Higher Education

- 47 undergraduate food science programs
 - 41 USA
 - 5 Canada
 - 1 Mexico

B.S. Degrees (1990-2005)





Education



Field of Highest Degree (%)*		
Food Science/Technology	47	
Agriculture	11	
Business/Marketing	8	
Chemistry	6	
Biological Sciences	5	
Nutrition	4	
Microbiology	3	
Chemical Engineering	2	
Food Engineering	2	

^{*} Emerging areas include, but not limited to, regulatory science, food safety, dietetics, packaging, food security, food sustainability; critical training in communications, leadership development, interdisciplinary facilitation, international supply chains

Highest Degree			
Degree	Women (%)	Men (%)	
Bachelor's	44	34	
Master's	31	23	
Doctorate	17	32	
MBA	4	8	
None/other	4	4	







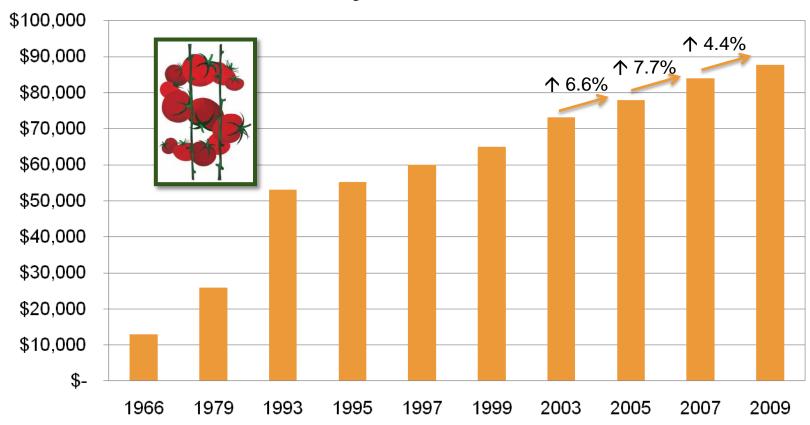




Salaries



Median Salary for Food Scientists



Kuhn ME. Food Tech 2010;64:20-37 http://www.bls.gov/oes/current/oes191012.htm (May 2009)



Agriculture and Food Scientists



Projections for 2011

 Rapid growth as agriculture and food scientists develop technology and products using biotechnology, nanotechnology while limiting

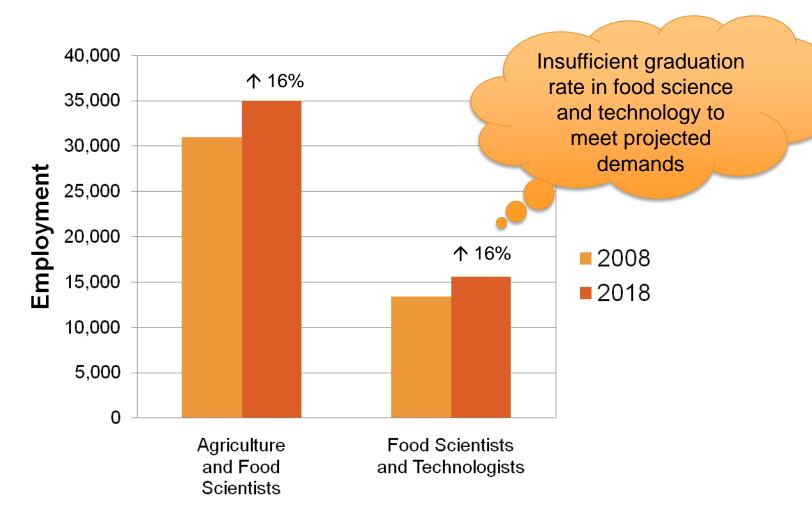
environmental impact

 Bachelor's degree in agriculture science adequate for most product development positions; Master's or doctorate preferred for research



Employment Projections







Occupation Projection (2018)



Industry	2008→2018
Food manufacturing	7.7
Animal food	4.7
Confections	-1.9
Fruit/vegetable	-3.2
Dairy	6.5
Seafood	18.6
Animal (processing)	14.9
Other (food)	13.7



Dietary Guidelines: Agriculture Implications



- 8.9 million <u>more</u> acres of cropland would be needed to support vegetable production (2002 statistic);10.3 million <u>more</u> acres (2015 projection)
- 4.1 million <u>more</u> acres of cropland would be needed to support fruit production (2002 statistic); 4.7 million <u>more</u> acres (2015 projection)
- In general, need nearly 2% <u>increase</u> in total US cropland (2002 statistic); more than 2.3% <u>increase</u> in total US cropland (2015 projection) or about 3% <u>increase</u> in harvested cropland (about 320 million acres; 1997 acreage)
- 107.7 billion <u>additional</u> pounds of fluid milk and milk products are needed (an increase of 66% - impact on number of dairy cows, feed grains, and "grazing" acreage);124.6 billion <u>additional</u> pounds (2015 projection), nearly 80% increase (cows, feed grains, grazing acreage)



Food Economy in China





The rising costs for food and energy distort China's consumer price index, whose methodology has long been criticized.

Ehe New York Eimes

By KEITH BRADSHER

Published: November 17, 2010



Food Science and Technology





Fresh tomatoes, after washing, breaking, pulping and removing peels and seeds, etc, are concentrated, sterilized, filled and sealed, which keeps the fresh taste.



Fat free instant noodles, vegetable/beef flavor package: Product Description: Noodles: Wheat flour, shortening, modified potato starch, salt, sugar, seasoning





Pollution-free Frozen Corn Quick Frozen Boiled Sweet Corn Vacuum Corn Frozen Corn Kernel Canned Sweet Corn Canned Corn Kernel Our factory integrates R&D, processing and produce frozen corn.



World of Food Science



Jiangnan University

- Food industry importance sector in Chinese national economy
- Food science and technology enjoys continuous growth
- China established goal to provide world-class education, especially in food science and technology (>180 institutions, 31 provinces, > 500 FT professors, > 100 guest lecturers and adjunct professors)
- 5-year plan > RMB 600MM (~\$90MM) investment + RMB 700 MM (~\$105 MM) in agriculture + RMB 100 MM (~\$15 MM) in food-related projects
- China established joint research centers with > 10 international universities (USA, Canada, UK, France, Japan, Korea)
 + scholar and student exchanges



Food Science in China



- The Chinese food industry is a dynamic and evolving industry with a wide range of opportunities
- Economics and food safety pose enormous pressures
- Consumers question whether Chinese products are safe, meet their sensory expectations, whether their costs are too high

Most Chinese companies lack a technical infrastructure and

a connection with the marketing activities

- Food scientists need to be more broadly educated vs. focusing on narrow disciplines to better function in this environment
- The demand for qualified food scientists in China is large and will continue to expand



A farmer picks rape blossoms at a farm on the outskirts of Shanghai, China



Food Beverages in China



California Navel Orange

Developments:

- China joined World Trade Organization (2001)
- China has growing disposable income (Urban, ~\$2400/capita; 2008)
- China imports nearly \$80 MM in food and beverage products per month with exports on the average of \$35-40 MM
- Total agricultural USA exports to China were \$1.1 B (1999)
- China is Asia's largest citrus producer, their poor transportation infrastructure and lack of cold storage facilities prevent many regions from receiving fresh, highquality citrus products after the harvest
- USA has opportunity to export to these regions during the winter harvest season and during the spring season, after the Chinese harvest has peaked
- Current USA exports of citrus products to China (mainly oranges) is nearly \$100 MM per year
- Success in this market relies on relationships and the symbiosis of Chinese marketing and American technology



Food Service in China



- There are many forms of the institutional food services: military, academic institutions, communes
- China opened possibilities in the late 70's and early 80's (e.g., initial companies were Kentucky Fried Chicken, McDonald's)
- Challenges included banking rules, currency issues, basic infrastructures, duties and taxes, raw material sourcing, labor regulations → slow business development
- China has established policies to attract foreign investments

China created business opportunities for all companies with 1.3 million

potential customers

 Prevailing issues include currency convertibility, layers of government approval procedures, lack of supporting industries, transportation industries, low cost reliable raw materials and tax structures The single most important requirement for entering China's HRI market: partner with a good distributor.

Market entry entails so many rules and so much red tape that few suppliers or end-users try to go it alone in this market.



New Food Ingredients in China



- China represents a growing point for the food industry
- China has about 500 ingredients and 1250 flavor substances approved and included in Hygienic Standards for Use of Food Additives
- Food ingredient development cannot meet the need of rapidly growing China food industry
- Ingredient needs include, but not limited to, flavors, yeast extract, sweeteners, sugar alcohols, oligosaccharides, preservatives, antioxidants, texturizers for bakery

Chinese Onion



Food Regulations in China



- China's food laws continue to increase in complexity
- Foodborne disease is a concern of consumers and public health authorities
- China's food system: 78% food processors < 0 employees and most farms being 2 acres or less.
- China's small farms combined with a cash-based and very large and fragmented food production system make traceability difficult
- China's WTO membership was a driving force that stimulated public health authorities
- China's awareness of the food control legislation and standards in other countries → a prerequisite in the international harmonization of food regulations
- Chinese system of food regulation is based on Food Standards and the National Hygiene Standard, and Standards for Food Additives
- State Food and Drug Administration (2003)



IFT Partnership with Chinese Institute of Food Science & Technology (CIFST)





食品的价值新取向

Nanotechnology

Nanoscience



Nanoscale

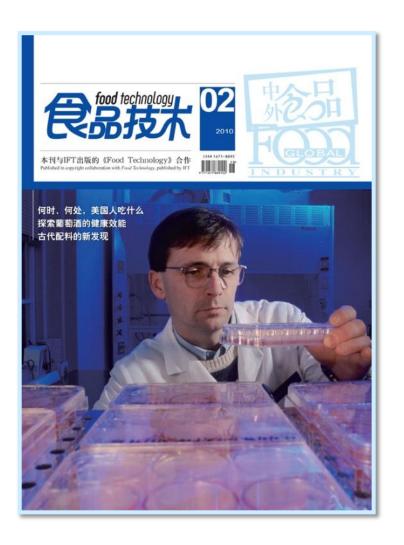


Iron Bioavailability



IFT Partnership with Chinese Institute of Food Science & Technology (CIFST)





- Collaboration for 10+ years
- Bi-annual educational summit
- Collaborative partnership symposia at IFT annual meeting
- We would love to replicate Almond Board support for CIFST to IFT to further cement collaboration and foster innovation in product development
- For more information about IFT's activities, please contact Amanda Perl aperl@ift.org



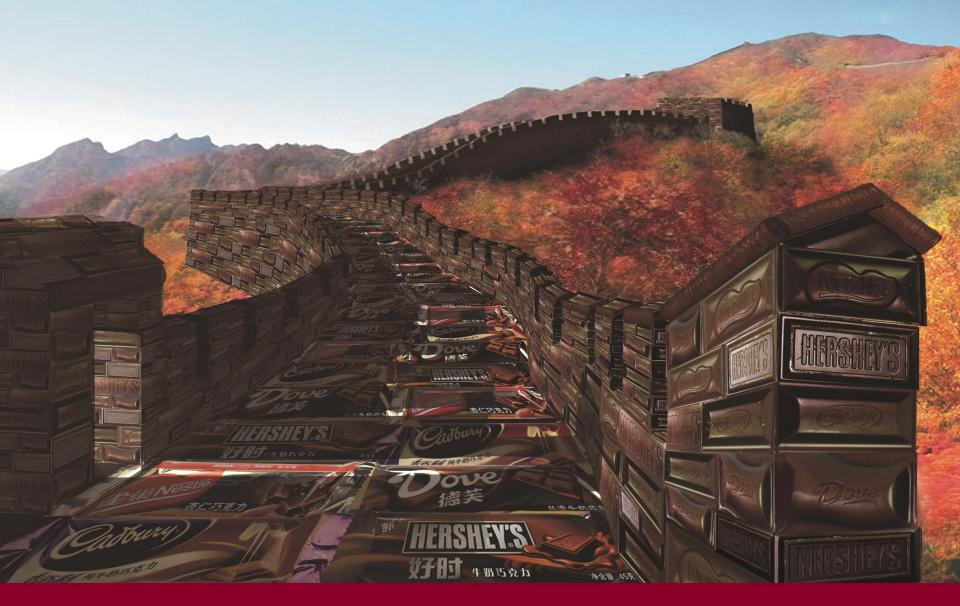
Thank You



Chocolate Fortunes in China

Lawrence L. Allen, Author of *Chocolate Fortunes*





Chocolate Fortunes In China

Lawrence L. Allen





China's Chocolate Journey



1978: CHINA WAS A CRUCIBLE

(Isolation & Cultural Revolution)

- CHOCOLATE (totally foreign product)
- **BRANDS** (-0- brand awareness)
- CONSUMERS (-0- product experience)



...were mixed together to create

an entirely new chocolate market !



Chocolate's China Journey



CHOCOLATE INDUSTRY'S CHALLENGE

- Establish <u>culinary</u> & <u>cultural</u> bridge
- Navigate the <u>complexities</u> and <u>ambiguities</u> of <u>emerging China</u>
- Understand consumers and meet their expectations















Chocolate's China Journey



ANY PLAYER COULD HAVE BECOME #1

- Emerging chocolate market **A LEVEL PLAYING FIELD** for all companies
- Consumers viewed chocolate as exotic foreign product all enjoyed the
 SAME PRESTIGE AND CREDIBILITY
- Retail prices relatively high / manufacturing costs relatively low
 NO FINANCIAL BARRIERS TO ENTRY
- Not a strategic industry, so <u>NO REGULATORY BARRIERS</u>
- EACH WAS FLYING BLIND with lack of consumer & market information, and BY THE SEAT OF THEIR PANTS with China's mercurial economic and regulatory environment.
- NO LOCAL PLAYERS TO SPEAK OF

WHICH WOULD ESTABLISH THE CHOCOLATE

TASTE PROFILE IN CHINA?



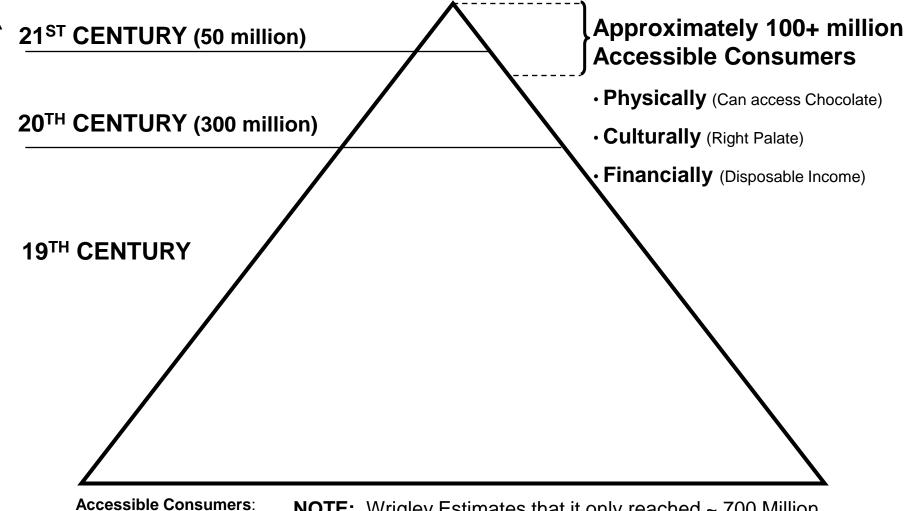


The Emerging China Market



Accessible Consumers: Defined





NOTE: Wrigley Estimates that it only reached ~ 700 Million

with its RMB 1.0 5-Stick pack of Double Mint

1980s: 10~20 Million

1990s: 20~60 Million

2000s: 60~100+ Million



Accessible Consumers: Location







China's Little Emperors



- ONE CHILD PER FAMILY policy
- Over <u>100 MILLION</u> strong
- Demanding & wielding "PESTER POWER" control spending power of six adults
- TASTE FOR WESTERN foods / snacks an economic force of their own.
- Lead chocolate <u>CONSUMPTION PATTERN</u> to mirror <u>DEVELOPED MARKETS</u>

- - within the space of their lifetimes.

PALATE TRAINED TO:

4 Grandparents

Vegetables, Rice, Noodles,

Dumplings, Meat as Garnish

2 Parents

Vegetables, Rice, Noodles, Dumplings more Meat, as main course Accept most western foods

Little Emperors

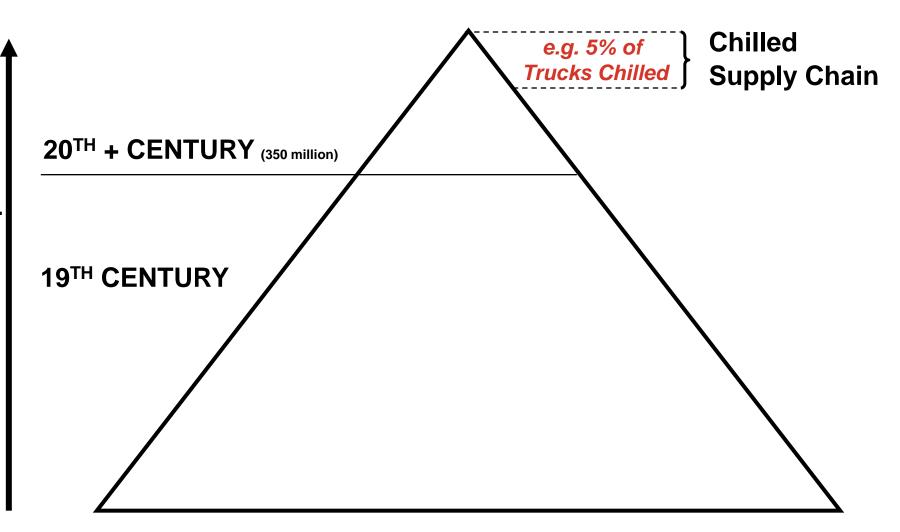
Fast Food: KFC, McDonald's, Pizza Hut Baked goods (bread), Sweet packaged snacks, Vegetables, Rice, Noodles, Dumplings: Occasionally





Supply Chain: Pyramid







Supply Chain: Gauntlet

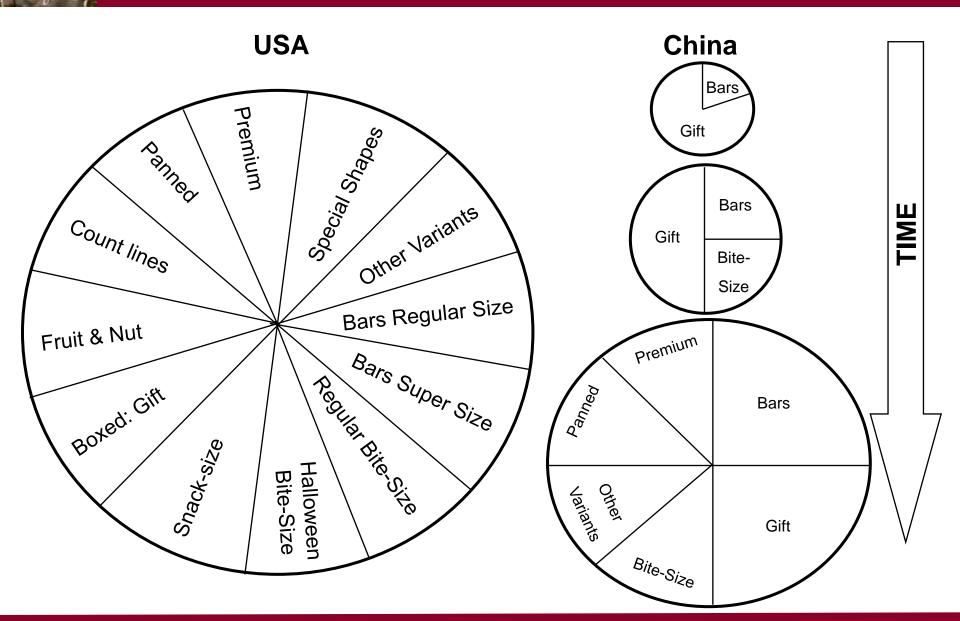






Chocolate Market: Evolution

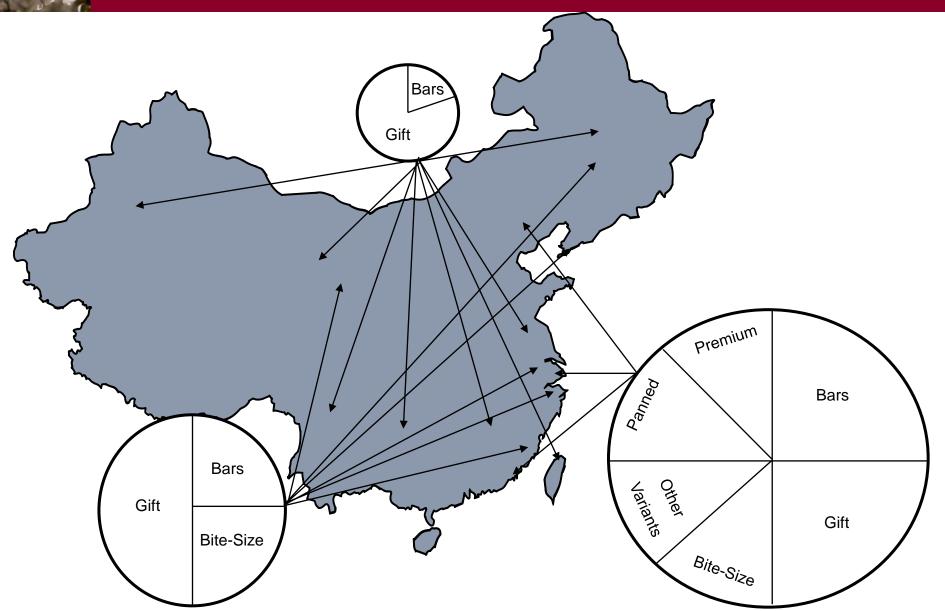






Multi-Tier Market









Chocolate Competitors

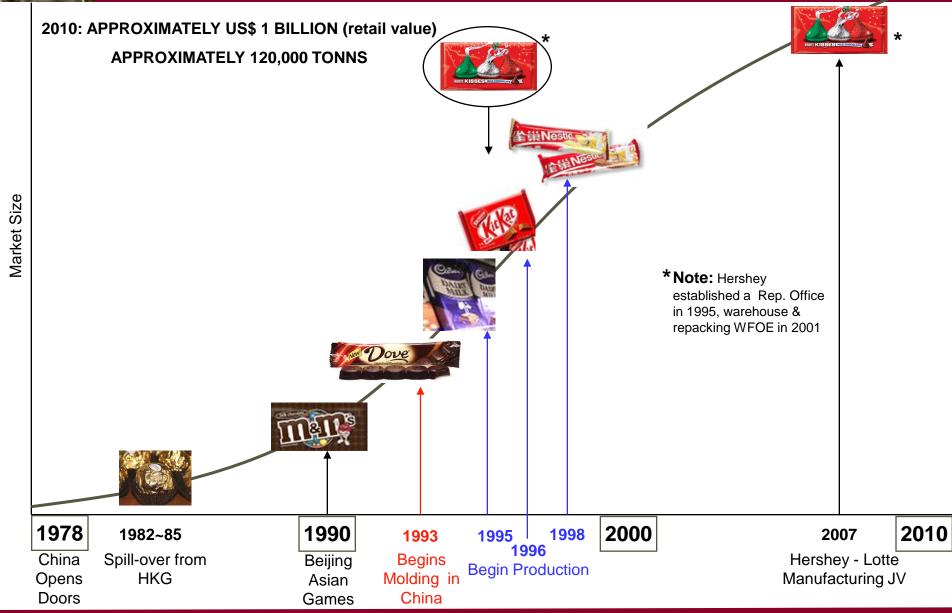






Competitor: Market Entry







Ferrero: Accidental Hero





Newcomer to retail chocolate, the wild card, with one of the most expensive and exotic chocolate

- Created in 1982
- Hand carried into China as gift Lunar New Year
- Created the first impression of chocolate 1980s
- Consistently invested in brand building with consumers
- Hasn't changed a 4 P's formula that has worked for 25 years



Hershey: Kissed Market Leadership Goodbye





<u>U.S. domestic-oriented</u>, and <u>did not have a proven track</u> <u>record</u> in more diverse and varied <u>international marketplace</u>.

- Stepped entry = flexibility: started with bars, shifted to Kisses
- #1 in Shanghai, # 2 in most other key cities But...
- Organizational chaos in China and International Division

 (Total in-country team change in 2001, 4 International Division Heads in 4 years)
- China organization collapsed in 2004 disappeared for 2 seasons



Nestlé: Sideshow





Selling chocolate worldwide since turn of 20th century, great depth and perspective to approach China market.

- Only 1 viable chocolate product: Kit Kat
- Compound chocolate / low price strategy
- Overbrand Strategy: little investment in Sub-Brand building
- A 3-year ROI on plant drove short-term investment decisions

Note: KitKat is manufactured by Hershey under license in the United States



Mars: Determined Hero





American company, with established international presence and broad base of experience to apply in China.

- 1st To proactively market / 1st With In-Country Manufacturing And...
- Consumer Responsive: from M&Ms to Dove when consumers demanded
- Imported block chocolate & molded in-country: manufactured later
- Used master distributor for first 7 years
- Invested heavily in building brands
- A 15-year investment horizon



Cadbury: Catastrophe





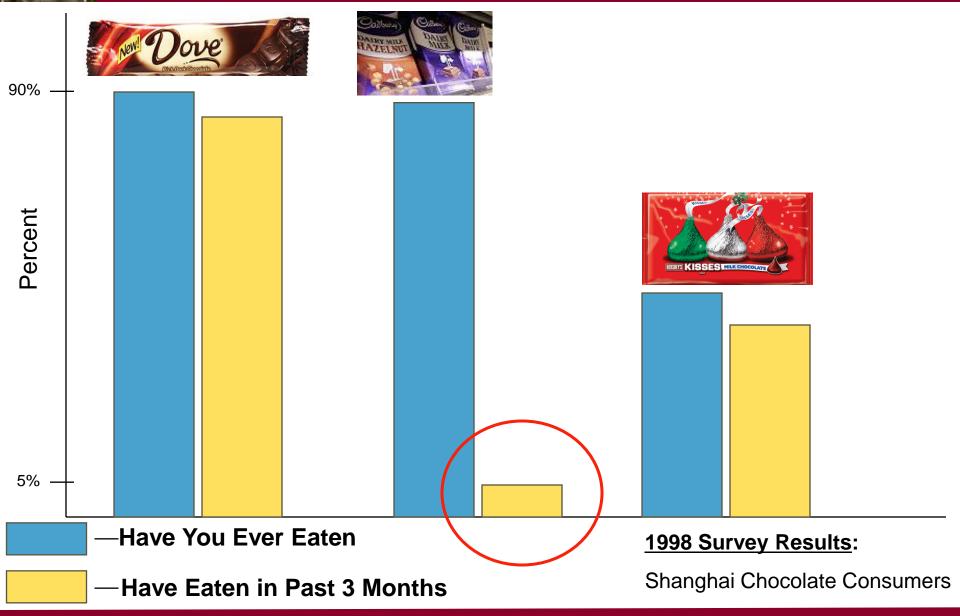
Also selling chocolate worldwide from turn of 20th century

- 2nd With In-Country Manufacturing / Invested in brands But...
- Did own distribution from start: mired in delivery & collection issues
- Manufactured with local ingredients from the start = taste variance



Cadbury: `95-`97 Taste Crisis







Cadbury: 2008 Melamine Crisis



September 2008:

The Chinese government reported that over <u>50,000</u> people sickened, nearly <u>13,000 hospitalized</u>, and four infants had died from drinking milk and milk-based infant formula contaminated with the industrial chemical melamine...

September 29, 2008:

Cadbury announced that it was recalling its Chinamade Dairy Milk Chocolate because it had tested positive for trace amounts of melamine. Its announcement explained that the tests "cast doubt on the integrity of a range of our products manufactured in China."





Cadbury: Catastrophe (cont...)





Also sold chocolate worldwide from turn of 20th century

- 2nd With In-Country Manufacturing / Invested in brands But...
- Did own distribution: mired in delivery & collection issues
- Manufactured with local ingredients from the start = taste variance
- Limited investment "pain" threshold vs. Mars (Corp vs. Family business)
- Organizational chaos (6 China Country Heads in 7 years, after 2000)





Opportunities For the Almond Industry

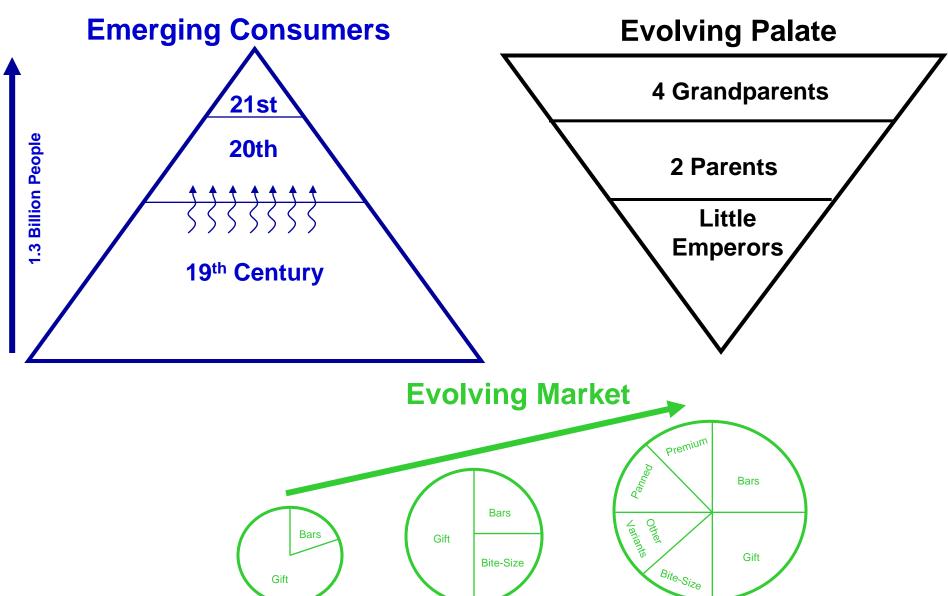


Strategies for Growing the Ingredients Market



Be Available, Be Visible...







Be Desirable



















Customer: Ingredients Buyers



What is of critical importance to ingredients buyers?



Food Safety

Cadbury Melamine Crisis: 2008

September 2008:

The Chinese government reported that over <u>50,000 people sickened</u>, nearly <u>13,000 hospitalized</u>, and four infants had died from drinking milk and milk-based infant formula contaminated with the industrial chemical melamine...

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Customer: Ingredients Buyers



What is of critical importance to ingredients buyers?



Freshness

Superior shelf-life under ambient conditions...

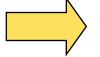




Customer: Marketers & BU's



What is of critical importance to marketers & BU Heads?



Consumption





Winning Future Battles



EXACTLY WHAT IT REQUIRED IN THE PAST:

Visionary LEADERS

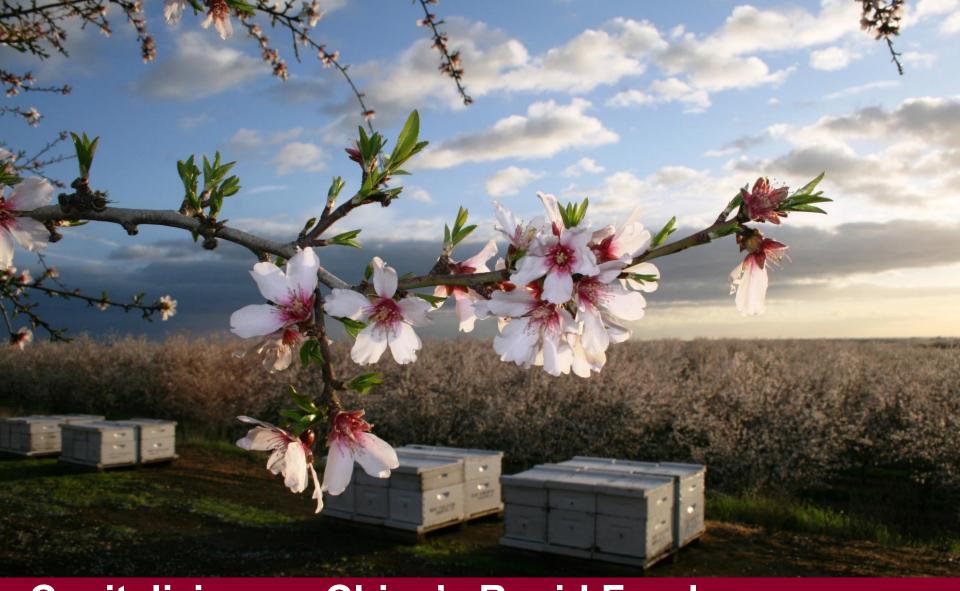
Sustained long-term COMMITTMENT the market AND CONSUMER

Unrelenting focus on meeting expectations of China's emerging CONSUMER





Thank You



Capitalizing on China's Rapid Food Industry Development

Dr. Sharon Shoemaker, UC Davis





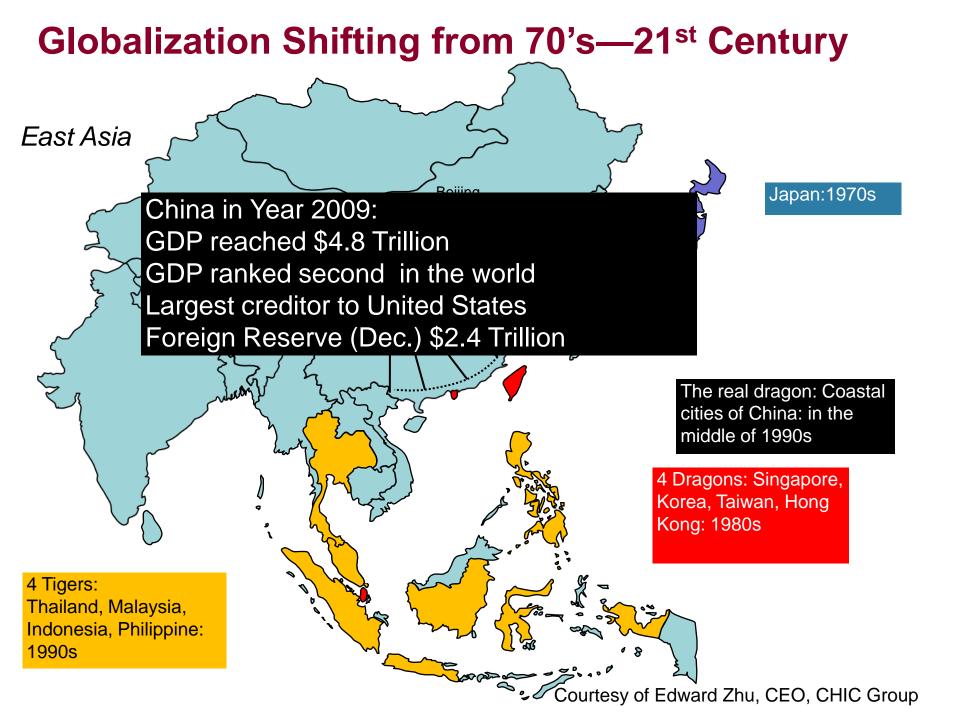
East Meets West: Bridging the Cultures with Innovative Food/Almond Solutions

Capitalizing on China's Rapid Food Industry Development

a perspective by
Sharon Shoemaker, Ph.D.
苏梅博士
California Institute of Food and Agricultural Research
University of California, Davis





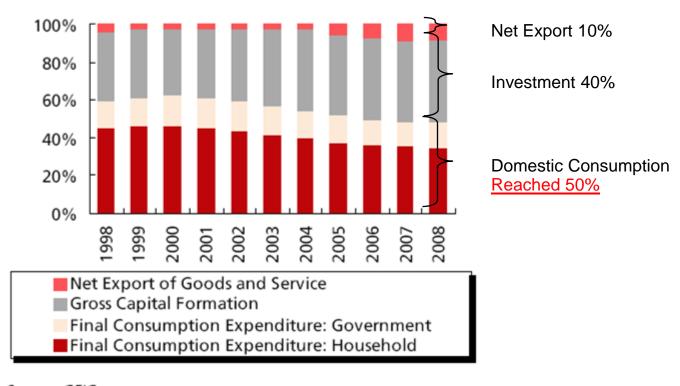




Domestic Consumption-Driven Economic Growth



China GDP breakdown



Source: CEIC

Domestic consumption policy facilitates the shift in economic growth pattern, which pushes the percentage of domestic consumption up during current economic development.

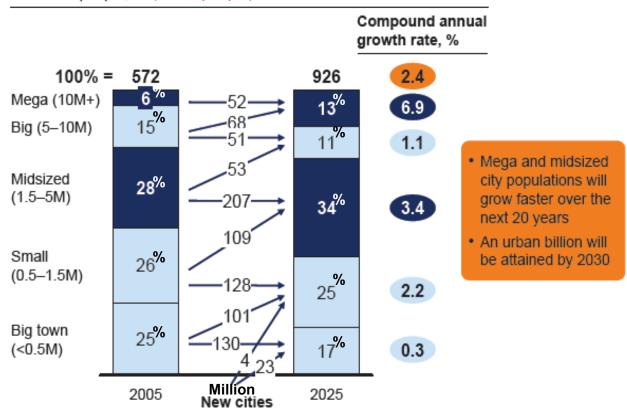


Urbanization is the Driver Behind Growth in Domestic Consumption



Population by city size

Millions of people, % (urban people)

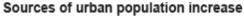


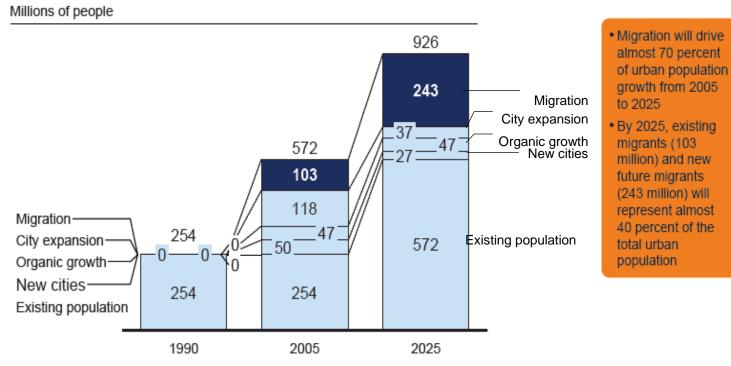
- The projected China's urban population will expand from 572 million in 2005 to 926 million in 2025.
 - this increase of more than 350 million Chinese city dwellers is larger than the entire population of the United States today
- By 2030, China's urban population is on track to reach 1 billion



Migration will be the Driving Force of Future Urbanization





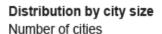


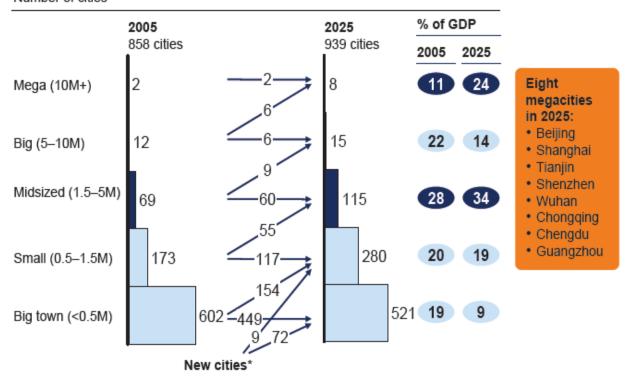
Rapid urban development coupled with surplus populations in rural areas generated by gradually increasing productivity in the countryside will together act to boost the mobile population to about an additional 240 million people in the next 20 years.



New Megacities will Emerge by 2025







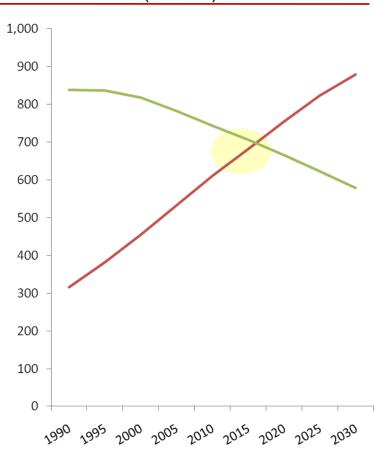
•From the MGI model, the number of new cities between 2000 and 2005 was nine, accounting for about half a percent of total urban population



Urbanization is a Major Driver, Leading to a Massive Middle Class in China

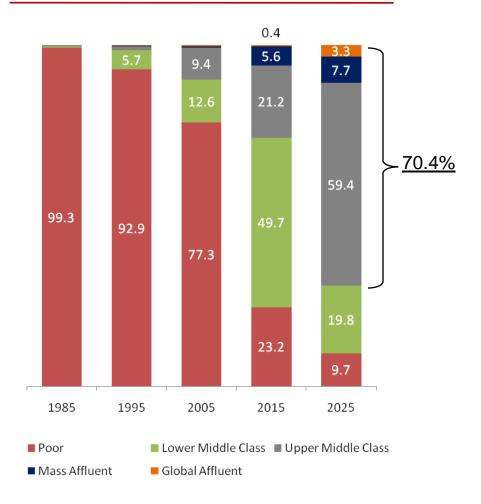






Urban ——Rural

China's Emerging Middle Class (percentage)



Courtesy of Edward Zhu, CEO, CHIC Group (source: UN Population Division, McKinsey & Co.)



What will Urban Chinese Buy?

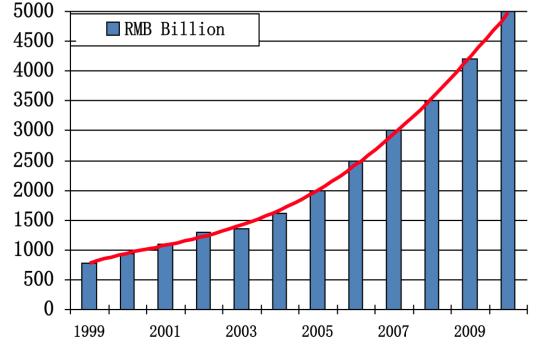






The Food Industry has become an Important Pillar in China's Economy





The Total Output of Food Industry in China

In 2008, the total food industry output in China reached RMB **4.2 trillion**, and ranked No. 2 industry (No.1 for 16 consecutive years before 2007)



Regional Comparison of Food Industry





2007(3300 billion)

Shandong: 678

Henan: 279

Guangdong: 236

Jiangsu: 202

Sichuan: 183

Liaoning: 143

Hebei: 140

Zhejiang: 131

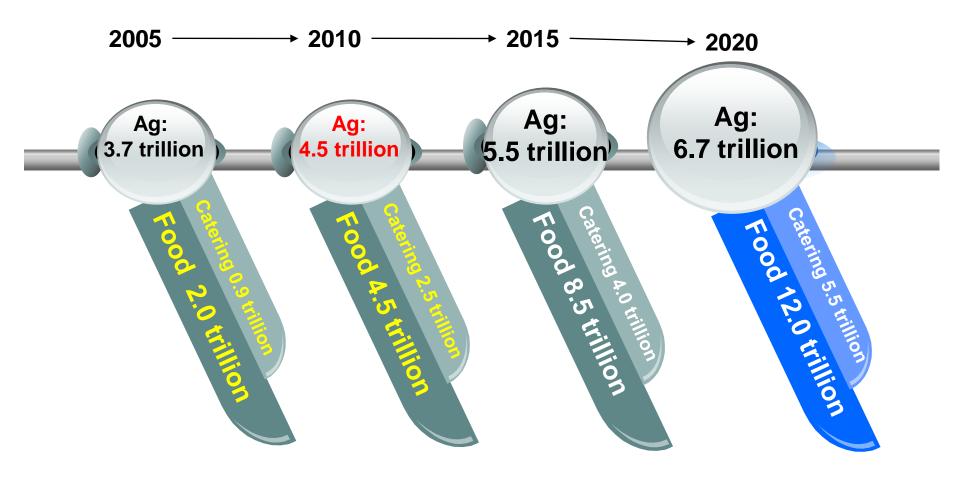
Shandong (5368 companies) 1000 / 0.1 billion 70 / 1 billion 4 / 5 billion 2 / 10 billion Henan
(2232 companies)
365 / 0.1 billion
19 / 1 billion
? / 5 billion
2 / 10 billion

Data from Jian Chen, President of Jiangnan University



The Rapid Pace of Development of the Chinese Food Industry





In 2010: Output of the food industry will be equal to that of agriculture

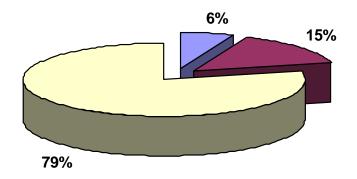


Large and Medium-sized Producers Dominate China's Food Industry

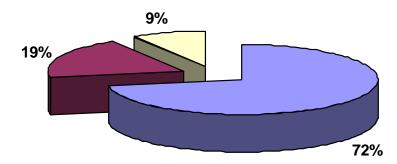


At present, China has 448,000 enterprises engaged in food production and processing. Among them, 26,000 enterprises of designated scale occupy 72% of the market, taking the leading role in terms of output and sales revenue

Percentage of food companies based on scale



Market shares of food companies



- □Companies of designated scales
- Companies with more than 10 employees

□ Small business with less than 10 people

Courtesy of Jian Chen, President of Jiangnan University



Modern Supermarkets in China



Shanghai

Beijing







Education is the Key Driver to Innovation and Growth of China's Food Industry

235 colleges and universities in China have food science programs

Universities with Food	Universities with Food	Universities with Food
Science undergraduate	Science master	Science doctoral
Program	program	program
235	>100	24

Data from Jian Chen, President of Jiangnan University

- An annual enrollment of more than 20,000 food science undergraduate students
- Many campuses in China are newly constructed
- Jiangnan University in Wuxi (new campus in 2007) has top and largest program in China. Collaborations and exchange with UC Davis (largest program in USA) since 1980's



Almond Board Student Competitions in China

engages, excites, captures new ideas, spreads the word

- Began in 2004 at Jiangnan University and now is across China
- Perfect format for interaction, education, and dissemination of the taste and health message of Almonds in new product and packaging concepts, tailored to local markets
- Engages and rewards students in 'creative' product development
- Excites and Educates It's All about Almonds!
- So successful that other organizations have copied the format
- For example, some of the winning product concepts are
 - Funny Almond Roll (2004)



Acknowledgements



In grateful appreciation for assistance received,

Jian Chen, President, Jiangnan University, Wuxi, China

Edward Zhu, CEO, CHIC Group, Shanghai, China

Guangwei Huang and Karen Lapsley, Almond Board of California



Thank You



Wrap-Up, Discussion and Q&A



ABC honors Dr. Shoemaker











In recognition of your steadfast commitment and contributions in building bridges between California almonds and Asian food science communities.

December 2010



Wednesday Lunch Speaker





Dr. Ernesto Poza

Thunderbird School of Global Management

The Continuing Spirit of Enterprise: Lessons from Centennial Family Companies

Please check with the registration desk for ticket availability.





Session at 11:40 am:

Treevix Herbicide, a New Innovation for Broadleaf Weed Control in Almonds from BASF in Grand Ballroom



Sessions at 1:40 pm:

Coming Down From On High in Arbor Theater

Harvesting: Clean + Safe in Grand Ballroom



Research Update



Turn in your **2010 Research Update** ticket at the ABC booth (#143) in the Exhibit Tent for the 2010 Research Update.





Rustler Giveaway



Register to Win the New Holland Rustler!	
Fill out your entry form and drop it at the Garton Tractor booth #81 or SmartCube Packaging System booth #82 in the Exhibit Hall Drawing will be held Thursday, December 9 at the 12:00 pm luncheon. Drawing is open to almond growers. Growers must be present to win.	
Name Company Phone Email	ı

Growers:

Win a New Holland Rustler from **Garton Tractor** and **SmartCube Packaging System.** Complete your entry form and return to booth #81 or #82.

