Natural Energy Powering Nature
Phytosanitary Irradiation in China

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Sixth Annual Chapman Phytosanitary Irradiation Forum
Overview

- Latest data on agricultural product imports in China
- Latest data on pests intercepted in China
- Research on phytosanitary irradiation in China
- Regulation & standards of phytosanitary irradiation in China
- Commercialization of phytosanitary & sanitary irradiation in China
Imports of Agricultural Products

Month 1-11 of 2015

- Total import and export value of US$167.34 billions from 1-11 of 2015
- Total import value is US$104.92 billions
- Total export value is US$62.42 billions

Source: Ministry of Commerce of PRC
Pests Intercepted in December 2015

Kinds of Pests Intercepted

- Insect: 60,784 (41.53%)
- Weed: 55,418 (37.87%)
- Fungus: 16,794 (11.48%)
- Other: 6,429 (4.39%)
- Nematode: 5,901 (4.03%)
- Bacteria: 558 (0.38%)
- Mite: 324 (0.22%)
- Virus: 139 (0.09%)

Source: General Administration of Quality Supervision, Inspection and Quarantine of PRC
Pests Intercepted in December 2015

Location Pests Intercepted

Source: General Administration of Quality Supervision, Inspection and Quarantine of PRC
Pests Intercepted December 2015

Source of Pests

Source: General Administration of Quality Supervision, Inspection and Quarantine of PRC
Research

- **Pests:**
  - TCK-Tilletia Controversa Kuhn in Wheat
  - Callosobruchus chinensis in grain storage
  - B. oicipitalis, Sternochetus frigidus and Sternochetus olivieri in Mongo
  - B. citri in oranges
  - B. dosalis in wax apple
  - Conopomorpha sinensis in litchi
  - Anoplophora glabripennis, Monochamus alternatus in wood
  - Others…
Research

Research Institutes:

- Chinese Academy of Agricultural Sciences
- Chinese Academy of Inspection and Quarantine
- Guangzhou Entry-Exit Inspection and Quarantine
- Shenzhen Entry-Exit Inspection and Quarantine
- Tianjin Entry-Exit Inspection and Quarantine
- South China Agricultural University
- Others…
Law on Quarantine

- The law of animal and plant quarantine Act of P.R.C Effective date: 1 April, 1992
- The implementing rules of animal and plant quarantine Act of P.R.C Effective date: 1 January, 1997
- New version of inspection rules of food quarantine Effective date: 1-July, 2016
National Standards for Phytosanitary Irradiation

- GB/T21659 -2008 Guidelines for the use of irradiation as a phytosanitary measure. (2008-7-1)
- It is based on International Standard for Phtosanitary Measures (ISPM18)
Industrial Standards on Phytosanitary Irradiation

- NY/T 2319-2013 Guide for the irradiation of tropical fruits in electron beam irradiation facility (MoA)
- SN/T 3707-2013 Irradiation as a phytosanitary treatment for Dysmicoccus neobrevipes Beardsley in banana (2014-6-1)
- SN/T 4070-2014 The minimum phytosanitary dose for Bactrocera dorsalis in mangoes and lichees.. (2015-5-1)
- SN/T 4071-2014 Phytosanitary irradiation treatment for Bactrocera dorsalis in wax apple and papaya. (2015-5-1)
- SN/T 4331-2015 Irradiation as phytosanitary treatment for imported fruits. (2016-4-1)
Commercialization of Phytosanitary Irradiation

- Shanghai CIQ
- Shanghai SN Irradiation Technology as demonstration unit for phytosanitary irradiation treatment
- 10 MeV, 10 kW Linac
- 2008 - 2011 irradiation treatment of imported fruit 280,000Kg
Commercialization of Phytosanitary Irradiation

- Key Laboratory of China Inspection and Quarantine Services (CIQ), Tianjin
- Research on irradiation quarantine & irradiation treatment
- Year 2009
- Linac 7.5MeV 5kW
Commercialization of Phytosanitary Irradiation

- Guangxi, CIQ
- China ASEAN Pingxiang Fruit Irradiation Quarantine Processing Center
- First dedicated electron beam for phytosanitary irradiation treatment of imported fruit in China
Commercialization of Phytosanitary Radiation

- Guangxi, CIQ
- Two Linac accelerator top+bottom
- 10 MeV, 15kW x 2
- 7 Loading lines
- Planned capacity: 100,000 tons/year
Food Irradiation

Source: Sichuan Institute of Atomic Energy
Food Irradiation

- Pickled chicken feet over 400k tons a year
- Pet food
- Dehydrated vegetables
- Spice & seasoning
- Chinese herbs
- Seafood: frozen and dry
Over 140 gamma irradiators operative in China
Design capacity over 160 MCi
Actual loading about 60 MCi
Over 40 irradiators designed over 1 MCi
Over 35 Linac (10 MeV)
6 Rhodotrons (10 MeV)
6 e/X Dynamitron Type

* Estimated at end of 2015
2005 vs. 2015 Gamma/EB Facilities

Credit: CIRC
CGN Dasheng Irradiation Center
CGN Dasheng 5.0 MeV e/X
Challenges of commercial scale phytosanitary irradiation

- Regulatory hurdles
- Effect on food quality
- Maintaining cold chain
- High capital investment, slow and low ROI
- Labeling
- Consumer acceptance
Thank You!

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