

Harmonisation in the ASEAN Region

Peter Leach

Market Access Team Leader

I love methyl bromide



Some industries love methyl bromide

From the source... summerfruit



“At last! Access to China for nectarines means great things”

The best bit about industry R&D is being able to see direct, implementable outcomes, Ian said.

“For example the recent Summerfruit research on low-dose methyl bromide is a fantastic piece of research that will actually have direct impacts on how summerfruit growers conduct business”.

China has approved fumigation for Australian Nectarines



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BY ANTHONY JONES
Friday 20th May 2016, 23:04 Hong Kong

Australian nectarine

Deal sees China recognise a fruit for the first time

Australia and China have signed joint protocols that will allow the bilateral trade of nectarines between the two nations.

Premier of Victoria
The Hon. Donald Ambrose MP

Home The Premier The Treasurer

Home > Minister for Agriculture, Fisheries and Forestry > Nectarine Growers

Minister for Agriculture

20 May 2016 Business

Home > Our department > News and events > News > Agriculture > 2016 > June > DAF science leads to export breakthrough

DAF science leads to export breakthrough

31 May 2016

Researchers have delivered a breakthrough which has finally opened up the lucrative Chinese market for stonefruit growers.

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DAF Horticulture Research Team from Left to Right: Brendan Missenden, Peter Leach, Thelma Peek, Marianne Eelkema, Pauline Wyatt, Ania Ganowicz, Lara Senior.

Queensland horticulture researchers have delivered a pest treatment breakthrough which has finally opened up the lucrative Chinese market for our stonefruit growers.

Minister for Agriculture and Fisheries Leanne Donaldson said this was a major development for our growers and exporters and cause for great jubilation.



Market access secured for Australian nectarines to China

Friday, 30 May 2016

Australian stonefruit growers now have new access to the Chinese market, following the agreement of new import protocols by both countries.

Department of Agriculture and Water Resources First Assistant Secretary, Louise Van Minnen, said successful development of the new protocols reflected strong collaboration between the department, the successful industry and government officials in nectarine producing states such as Victoria and South Australia.

Media Contacts

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Members of the public and industry can contact us through our general enquiries line.

Summerfruit AUSTRALIA

11 May 2016; Press Release

Summerfruit Australia Limited achieves P.R.China, Nectarine Access for 2016/17

The Australian stone fruit industry welcomes the joint signing of protocols for Australian nectarines to be exported to China and the import of Chinese grown nectarines into Australia. This has taken years for industry to achieve and appeared to be not achievable for a few more years after a

As a quarantine entomologist I get asked by industries what treatment should they use?

1. The treatment that meets your trading partners requirements
2. The treatment that results in the minimal impact on quality and shelf life
3. The treatment that is most economical



1. The treatment that meets your trading partners requirements
2. The treatment that results in the minimal impact on quality and shelf life
3. The treatment that is most economical



- You may have a crop that is highly tolerant to irradiation (e.g. strawberries love irradiation)
- You may have an irradiation facility very close by that fits perfectly into your supply chain
- But if the country you want to export to doesn't accept irradiation than you cannot use it

This is a classic case where lack of harmonisation is causing problems



- That is why the Australian stone fruit industry funded work on low dose methyl bromide
- It was not because they love methyl bromide
- They wanted market access and they didn't want to use sea freight (i.e. not cold treatment)
- Australia has some of the cheapest air freight in Asia and some of the most expensive and irregularly scheduled sea freight.

The Queensland Market Access Team is currently working on a number of projects co-funded with industry and Horticulture Innovation

A range of technologies

- Cold Treatment
- VHT of Mango
- Host status of avocado
- Host status of mango
- Irradiation
- Low dose methyl bromide



9 industries

- apple and pear 
- avocado 
- citrus 
- table grape 
- capsicum 
- mango 
- pumpkin 
- nectarine, peach and plum
- strawberry 



- We want to provide multiple treatment options for each commodity so exporters can choose between
 - **chemical and non-chemical treatments**
 - **and sea freight or airfreight**

Industries need multiple options because having all your eggs in one basket is dangerous

A range of technologies

- Cold Treatment
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- Irradiation
- Low dose methyl bromide



9 industries

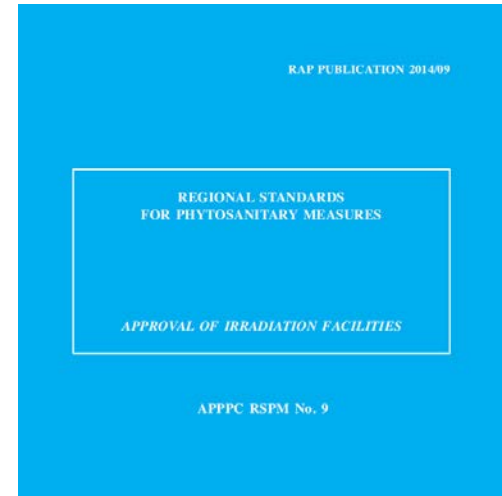
- apple and pear 
- avocado 
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Industries need multiple options because having all your eggs in one basket is dangerous

- Mango exports to NZ in the 1980's used EDB. It was the only treatment option available
- When EDB was banned we lost access to NZ until irradiation was approved in 2004
- Tomato and capsicums had access to NZ using dimethoate (1 cent per kg)
- When dimethoate use was restricted we lost access to NZ until irradiation was approved 2 years later

When industries have a choice of different treatments they will decide what is the best treatment for them

- But to be a true assessment we need to have harmonisation
- It will not be a fair test if irradiation has extra regulatory costs (paying for an inspector to be present)
- Labelling irradiated product is another cost to industry
- But even labelling requirements are not harmonized and can vary from country to country.



Post Treatment Security

- Post treatment security also varies for each of the technologies
- Post treatment security can actually cost more than the treatment itself and once again it is not harmonized (James Allen is the person to ask about this issue)



If irradiation is replacing existing treatments negotiations should be much quicker

- Some of the biggest delays in bilateral negotiations can be developing pest lists and undertaking the PRA.
- Because stone fruit wanted access to China the pest lists have been developed and the NPPO's have identified the pests of concern. This process can take years.

If irradiation is replacing existing treatments negotiations should be much quicker

- You don't need to negotiate a new protocol
- The existing protocol can be modified to include irradiation.
- But negotiations between NPPO's should be much simpler and quicker

How long does it take to get a new protocol approved?

2 Years?

5 Years?

10 Years?

20 Years?



Unfortunately all the scenarios' below are correct

2 Years

5 Years

10 Years

20 Years



Why?



- It is not because that is how long negotiations take (sometimes)
- It is not because the data sets you need take that long to collect (sometimes)
- But mainly because the vast majority treatment schedules are not harmonised (that is changing rapidly with ISPM 28 and generic doses)

Approval of irradiation protocols has expanded rapidly (2004 to 2018) in Australia



- Mangoes (NZ/US/Malaysia)
- Tomatoes (NZ)
- Capsicums (NZ)
- Lychees (NZ/US)
- Papaya (NZ)
- Cherries (Indonesia, Vietnam)
- Plums (Indonesia)
- Table Grapes (Indonesia, Vietnam)
- Mandarins (Vietnam)
- Oranges (Indonesia)
- Persimmons (Thailand*)

*protocol is in place but no exports yet

One of the main reasons for the rapid expansion is the 150 generic fruit fly treatment

- Irradiation is the only treatment that has a generic treatment approved by the IPPC
- **This means industries do not have to fund any more research on fruit fly**
- It is also the only treatment that has a generic 400 Gy accepted by Australia, India, Indonesia, Mexico, New Zealand, Pakistan, South Africa, Thailand, United States and Vietnam. (Thank you USDA/APHIS)



IPPC generic approvals are also an insurance policy

- If we had an incursion of an exotic fruit fly species it would be disruptive.
- But disruption to trade should be minimal.
- NPPO's will still need to negotiate treatment options and discuss the risk the new pest poses
- But the IPPC generic treatment of 150 Gy means that the treatment can be adopted with no further research required.



IPPC generic approvals are also an insurance policy

- In Australia we had an incursion of Papaya Fruit Fly (AKA dorsalis) in 1995
- Our market access to Japan for mangoes had been established less than 12 months earlier
- All exports were shut down over night until we undertook VHT studies
- If that happened today and we were using irradiation then no research would be required.



No more efficacy research is a huge benefit to small industries

- Small industries simply cannot afford to fund efficacy packages that meet international standards.
- The cost of conducting efficacy trials can be millions of dollars.
- An example is cold treatment research on Australian grapes for access to Japan.
- Research was conducted at three temperatures, against 2 fruit fly species in nine grape varieties and took over a decade to complete (De Lima et al 2017).



No more efficacy research is a huge benefit to small industries

- At peak periods over 140 staff were employed
- The verification trial cost industry more than \$3 million dollars.
- The research was originally for Japan but has resulted in market access to China and Korea.
- Very successful result but it is beyond the funding capability of small industries.



Industries do not need to invest in treatment infrastructure or attain NPPO accreditation to utilize the treatment.

- Commercial irradiation facilities are service providers who conduct treatments and in conjunction with the NPPO's issue Plant Health Certificates
- In Australia our VHT plants are privately owned and normally don't treat fruit for other growers.
- So it is really only for big growers
(some farms have more than 90000 trees)



Generic doses are the key to success but please don't abuse them

- It is important that 400Gy dose does not become the default treatment
- You may have a protocol that has a treatment for fruit fly and an inspection for other pests
- If irradiation replaces the existing treatment it is important that the 150 Gy fruit fly treatment is used
- Don't automatically default to 400 Gy
- It will have huge benefits for fruit quality and will help avoid breaching the current maximum dose of 1 kGy



While this talk is on harmonisation I have to admit Australian regulations are not fully harmonised



We have not adopted all the CODEX recommendations.

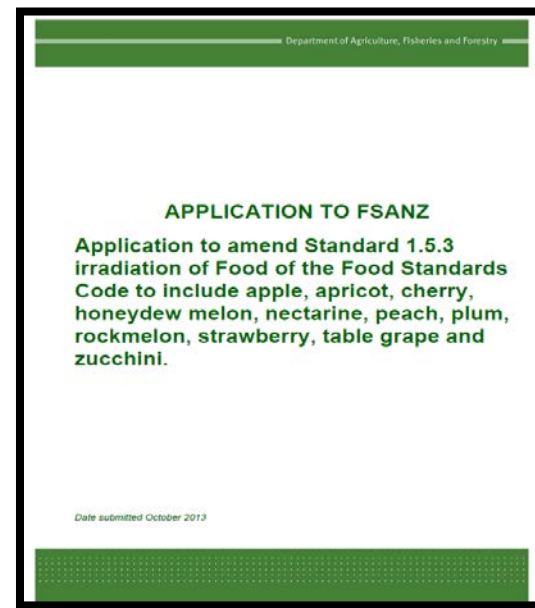
Our approvals are on a case by case basis rather than class wise approval

But we are currently developing applications which hopefully will dramatically expand the list of approved fruit and vegetables



Food Standards Australia New Zealand (FSANZ) has approved 26 fruit and vegetables

- tropical fruits (mango, breadfruit, carambola, custard apple, litchi, longan, mangosteen, papaya and rambutan) (Application A443)
- persimmons (Application A1038)
- tomatoes and capsicums (Application A1069)
- apple, apricot, cherry, nectarine, peach, plum, honeydew, rockmelon, scallopini, strawberry, table grape, zucchini (courgette) (Application A1092)
- blueberries and raspberries (Application A1115).

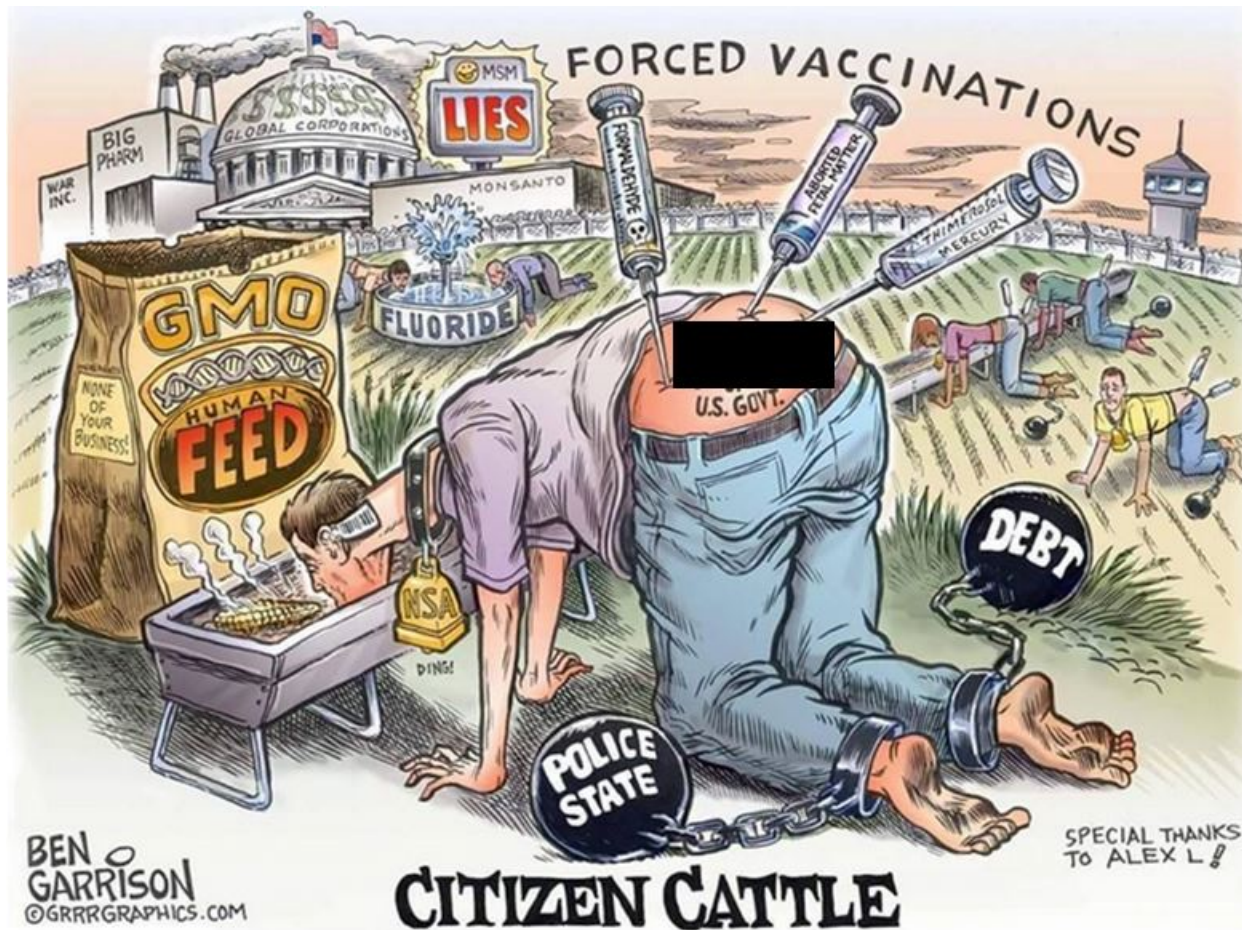


Consumer Acceptance and Regulator Acceptance.

They should be two completely separate issues.

Some countries have made science based decisions and despite the fear of huge negative consumer reaction it has all gone pretty smoothly

When it comes to food, or the safety of your family, people's opinions can be polarised



When vaccination was first proposed it was a contentious issue



Slide blatantly plagiarized from Ron Eustice

Vaccination is still a very contentious issue today



Fluoridation of water is another contentious issue



IS YOUR TOOTHPASTE

POISONING YOU?



DON TOLMAN
INTERNATIONAL

Microwaves?

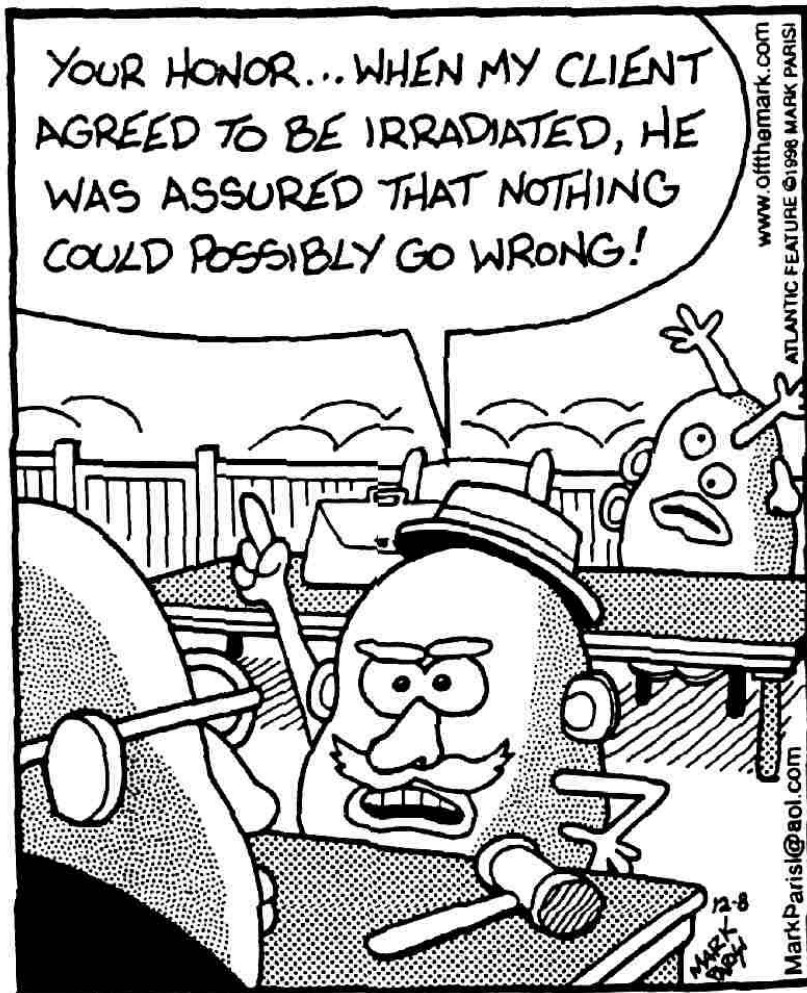


Pasteurisation?



Just like other technologies involving food safety or human health the debate is NEVERENDING

OFF THE MARK



- 🌱 There is always resistance to any new technology (IRRADIATION IS NOT NEW)
- 🌱 There is always a percentage of people who never trust government or company sponsored scientists
- 🌱 And everyone has a right to personal choice and if their personal choice is not to eat irradiated food that is ok.

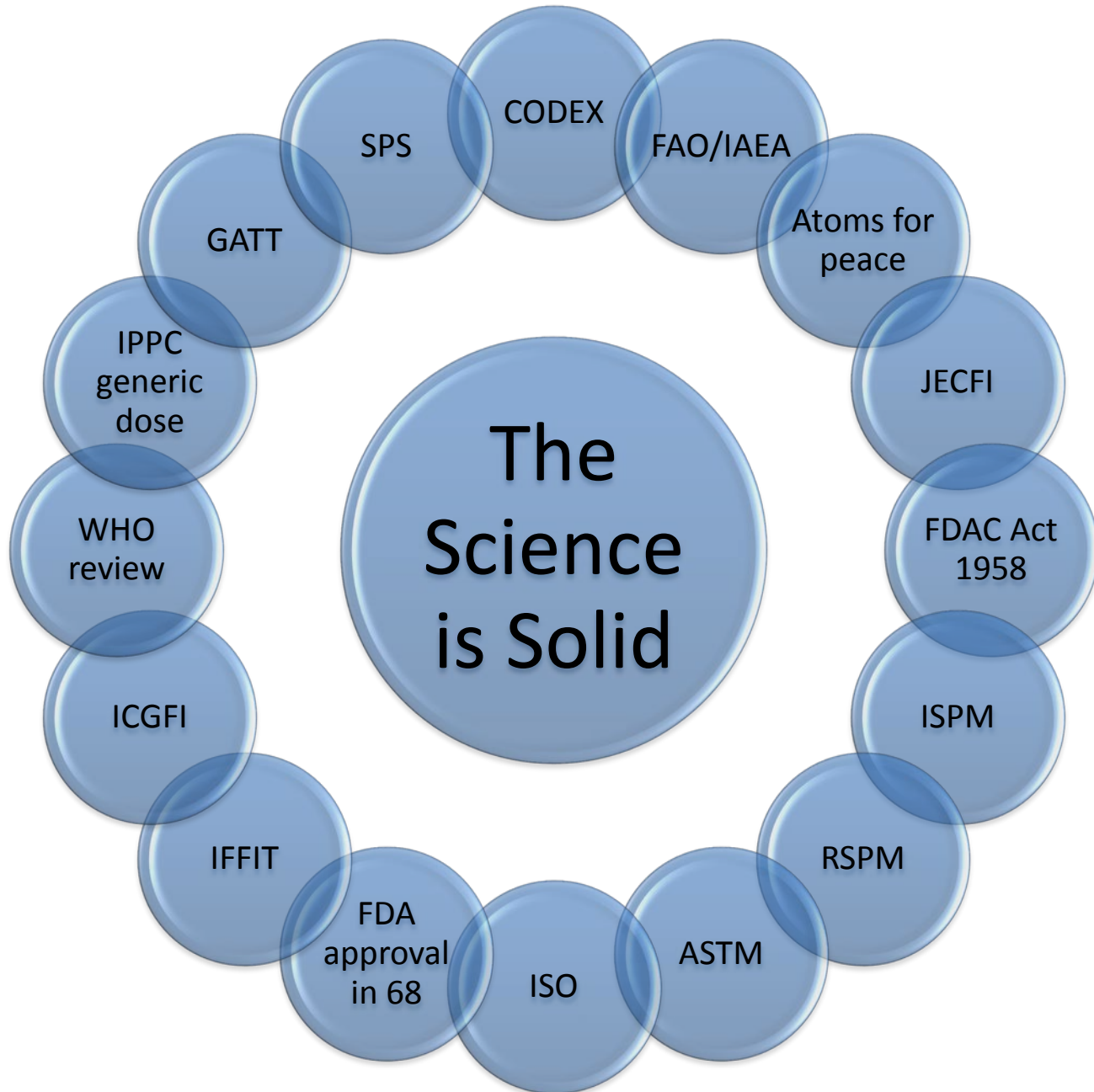
Because irradiation has been classified as an additive it means that there are labelling requirements

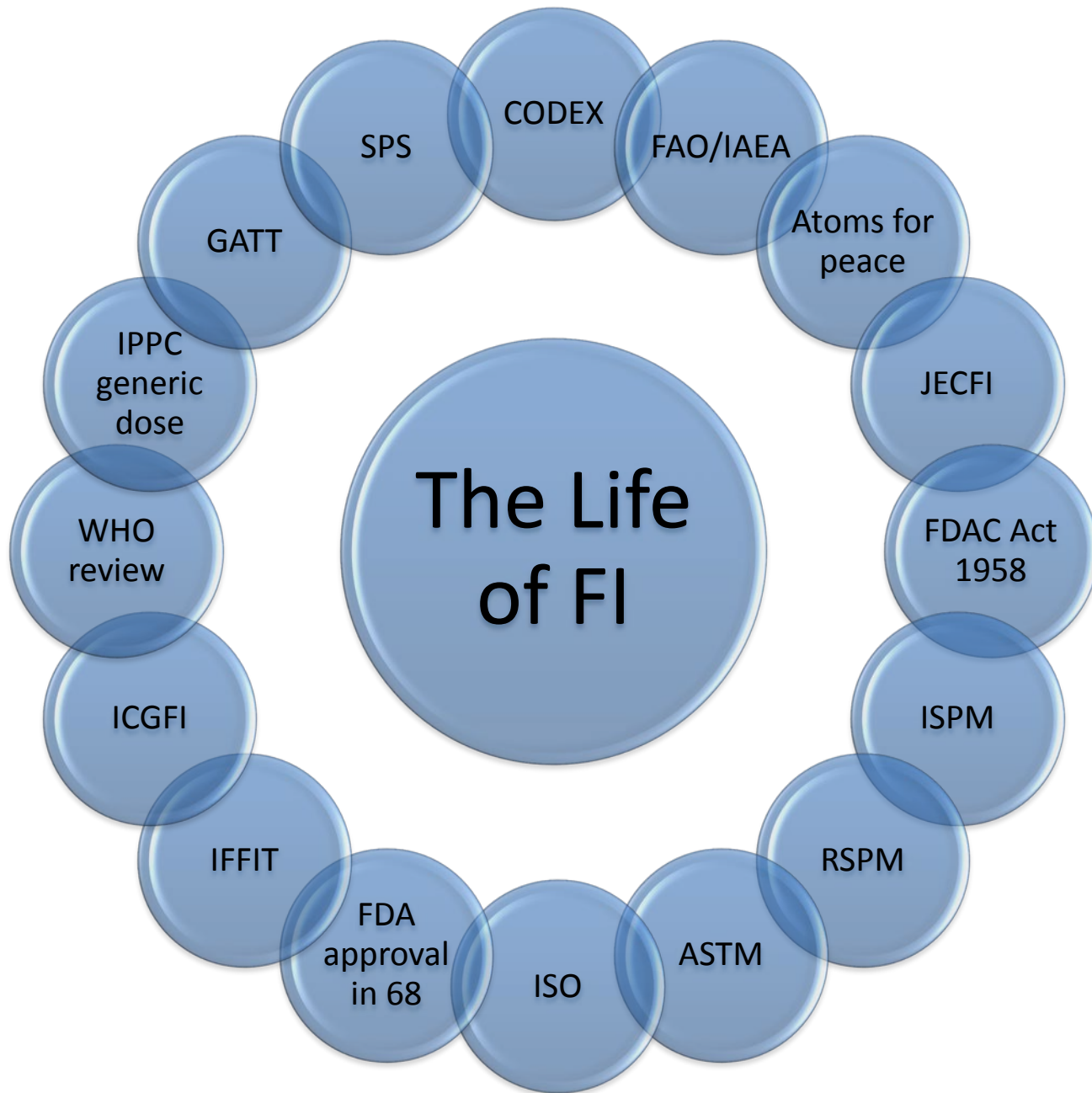


- 🌱 That provides people with a choice to buy or not buy irradiated food.
- 🌱 Other treatments don't provide customers with that choice
- 🌱 Some industries have embraced labelling requirements
- 🌱 Other industries want it removed

While people have a right to choose, regulators need to make decisions based on science and stop worrying about the myths and lies



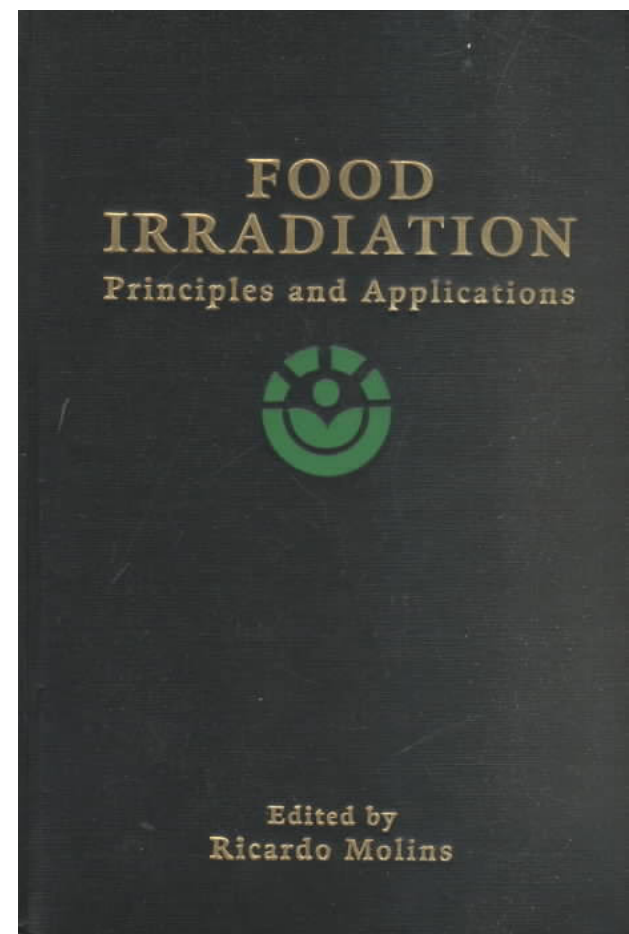




Research conducted over the years on the wholesomeness and safety of irradiated foods makes it without doubt the most extensive undertaking by food scientists ever.

It has been studied so extensively that the authors of the book refused to continue the debate on safety issues

They also commented that if cooking of food was a new technology it would never get regulatory approval due to the massive physical and chemical changes the process causes.



What do we need to do as a group to expand the use of irradiation ?

- How about more consumer education and surveys ?



Please don't do consumer surveys

- An alternative to conducting consumer surveys is to acknowledge the fact that the availability of irradiated foods in the marketplace is itself an endorsement of product quality and safety (Bruhn 1999).
- This point is strenuously pursued in a recent review on consumer attitudes by Roberts and Henon (2015) titled “Consumer response to irradiated food: purchase versus perception”.



If you want to know what people really think see what is happening at retail outlets

- A very good example of retailer's assumptions on consumer perceptions of irradiated food is the case study of Australian mangoes to New Zealand.
- In the first few years of exports the major chains did not stock irradiated mangoes but several small independent stores did.
- After several years of successful sales irradiated mangoes can now be purchased from both major and independent stores (Roberts and Henon 2015).



But be careful how you interpret the results

- Irradiation is approved by all states and territories in Australia
- 26 commodities have FSANZ approval yet sales on the domestic market remains very low at 48 tonne in the 2016/2017 financial year.
- There has been no protests or negative publicity
- The low volume simply reflects the fact that produce grown and sold on east coast of Australia without the need for treatment for fruit fly.

Heat and cold are not used domestically

- It also suggest that for access to fruit fly free areas of Australia that methyl bromide and insecticides are still the predominate treatments.
- Heat and cold treatment are routinely suggested as viable alternatives to irradiation.
- While this maybe be true for some lucrative export markets
- There are no businesses in Queensland registered for either treatment
- Industry does not view them as viable alternatives for the domestic market.

Thank You



Food and Agriculture
Organization of the
United Nations



International
Plant Protection
Convention

R-03
2017

ENG

Commission on Phytosanitary Measures Recommendation R-03

Recommendation on: Replacement or reduction of the use of methyl bromide as a phytosanitary measure

ADOPTED 2008 | PUBLISHED 2017

- Increasing exposure time with a view to reducing dosage where technically feasible
- Re assessment of doses and exposure times in order to reduce them
- Use of optimal temperatures when fumigating

Our research on low dose methyl bromide meets IPPC recommendations

- New protocols for peaches and nectarines to China are using 18g/m³ at 18°C for 5 ½ hours.
- Treatment relies on high retention rates and excellent temperature control
- Days of fumigating under a tarpaulin are gone.

Low-dose methyl bromide fumigation as a quarantine disinfestation treatment for nectarines against Queensland fruit fly (*Diptera: Tephritidae*)

P.M. Wyatt, M. Eelkema, I.A.W. Wells, D. Joyce, L. Senior and P.L. Leach
Department of Agriculture, Fisheries and Forestry, GPO Box 267, Brisbane Q 4001, Australia.

Abstract

White nectarines (*Prunus persica* var. *nucipersica*) were fumigated with methyl bromide (MB) at a nominal treatment dose of 18 g m⁻³ at 18°C for 5 h and 30 min as a quarantine disinfestation treatment against *Bactrocera tryoni*, the Queensland fruit fly. Three large scale trials were conducted against each of the four immature lifestages, eggs and first, second and third instars. There were no survivors from the estimated 43,614 eggs, 41,873 first instars, 41,345 second instars and 33,549 third instars treated, thereby resulting in an efficacy of >99.99% mortality at the 95% confidence level for each lifestage. Of the 12 trials reported herein, the highest concentration of MB, sampled from the chamber headspace analysed by gas chromatography, was 18.7 g m⁻³. The maximum chamber temperature from 5 min readings was 19.7°C and the maximum fruit core temperature was 19.5°C. The treatment time for all trials was exactly 5.5 h. Thus the recommended treatment dose to disinfest nectarines from *B. tryoni* is 19.0 g m⁻³ MB at 20.0°C for 5.5 h. Fruit quality trials were conducted on white nectarines at three combinations of treatment parameters: 15 g m⁻³ MB at 19°C for 5.25 h; 18 g m⁻³ MB at 19°C for 5.5 h and 21 g m⁻³ MB at 19°C for 5.5 h. The fruit were stored at 0, 4 and 8 days at 4°C and 8 days at 4°C followed by 4 d at 22°C. They were then assessed for skin colour, flesh colour, skin defects, flesh defects, fruit weight loss, flesh firmness, total soluble solids, titratable acidity and rots. There was no significant difference between untreated control and MB treated fruits in any of the parameters measured. Thus the treatments did not have adverse effects on fruit quality.

Keywords: *Bactrocera tryoni*, fruit quality, export, *Prunus persica* var. *nucipersica*

INTRODUCTION

Australian-grown nectarines are a host to Queensland fruit fly, *Bactrocera tryoni* (Froggatt). Thus they are required to undergo a disinfestation treatment against fruit flies before they can be exported to markets with quarantine barriers against this pest. Current protocols for nectarines utilising cold disinfestation with treatment durations of 12-22 days restrict exporters to using sea freight. Quarantine protocols incorporating air freight are required to effectively target market opportunities in Asia, especially during peak demand. Fumigation treatments can be combined with air freight and have the additional advantages of being easy and relatively inexpensive to apply. Methyl bromide (MB) is currently the predominant fumigant for phytosanitary purposes. It is used for disinfestation of many fruits and vegetables (Heather and Hallman, 2008). Methyl bromide was identified as a stratospheric ozone depleting chemical however, quarantine and pre-shipment (QPS) applications are exempt from the general ban (Johnson et al., 2012). Commercially available recapture systems for MB offer fumigation within sealed chamber without the loss of the fumigant to the atmosphere.

Current fumigations schedules for phytosanitary treatments for fresh fruit and



Acta Hort. 1105. ISHS 2015. DOI 10.17660/ActaHortic.2015.1105.56
XXIX IHC – Proc. Int. Symp. on Innovative Plant Protection in Horticulture,
Biosecurity, Quarantine Pests, and Market Access
Eds.: C. Hale, D. Hunter, W. Roberts, R. Ikin and S. McMaugh

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