



Food and Agriculture  
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# IPPC Global Workshop on Systems Approaches

Santiago, Chile  
1 – 4 December 2025

In partnership with:



Australian Government  
Department of Agriculture,  
Fisheries and Forestry

## Economic cost-benefit analysis of the implementation of Systems Approach

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## Risk Management Options Used in Chile for Exports to Different Markets

### Phytosanitary measures

1. Inspection Only. (when the risk rating is low)
2. Quarantine treatment (probit 8.7 to 9) medium, high risk
3. Systems Approach. (Minimum two independent measures) medium risk.



Phytosanitary measures, in proportion to the identified risk. These measures should take into account the principle of “minimal impact” (NIMF, FAO 1996).



## Cost of methyl bromide fumigation in Chile and at destination of fruit exported to USA (boxes)

SEASON	FUMIGATION IN CHILE (BOXES)	FUMIGATION AT DESTINATION (BOXES)	TOTAL (BOXES)
2021/22	3,265,022	42,084,406	45,349,428
2022/23	4,750,825	35,809,510	40,560,335
2023/24	3,991,798	44,212,166	48,203,964
AVERAGE (BOX)	4,002,548	40,702,027	44,704,576
Fumigation Cost USD	2,001,274	12,210,608	14,211,882

Fumigation cost in Chile: USD 0.5/Box

Fumigation cost at destination: USD 0.3/Box



**Main fruits fumigated: Table Grapes, blueberries, kiwis, citrus fruits, stone fruits.**

**Of the total fumigated: 91% is fumigated at destination**





## Cost of methyl bromide fumigation in Chile and at destination on table grapes exported to USA (boxes)

FRUIT	FUMIGATION IN CHILE (BOXES)	FUMIGATION AT DESTINATION (BOXES)	TOTAL (BOXES)
TABLE GRAPES (Box)	420,205	34,083,290	34,503,495
of the total fumigated (%)	10.5	83.7	77.2
Fumigation Cost USD	210,102	10,224,987	10,435,089

Fumigation cost in Chile: USD 0.5/Box

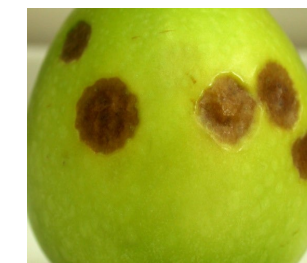
Fumigation cost at destination: USD 0.3/Box





## Phytotoxic effects of methyl bromide

- Methyl bromide can cause phytotoxic damage in some fruits or certain varieties
- External damage frequently takes the form of brown lesions
- It can also manifest as a scald
- predisposition to fungal rot





## Implementation of systems approach used in Chile

- ✓ Investment costs, if necessary, for a new inspection site (USD 800,000, Atacama Region).
- Pre-harvest
  - ✓ Pest monitoring system (Use of pheromone traps)
  - ✓ Field inspection system in search of the target pest
- Harvest
  - ✓ Laboratory sample analysis system (taxonomy, PCR)
  - ✓ Traceability system for dispatch fruit from the orchard to the packinghouse
  - ✓ Guard system in packinghouse and storage of processed fruit and dispatch.



## Estimated certification costs per production unit (SDP; SECTOR) for different fruit species under the Systems Approach in Chile

SPECIES	MARKET	Pre-harvest mitigation measure	Average production unit ha/CSG	COST/BOX USD
TABLE GRAPES	USA	Field inspection, sampling and laboratory analysis	4	0.05
PLUMS	USA	Monitoring and Field inspection	15	0.09
BLUEBERRIES	USA	Monitoring and Field inspection	10	0.15
MANDARINS	USA	Sampling and laboratory analysis	4	0.03
CHERRIES	KOREA-JAPAN	Monitoring, sampling and laboratory analysis	10	0.22







## Cost of table grapes exports to the USA (boxes) using Systems approach v/s alternative cost with fumigation 2024/25 season

TOTAL COUNTRY (Boxes)	DESTINATION TO USA (Boxes)	%
67,900,000	36,700,000	54.1
TOTAL ATACAMA AND COQUIMBO REGIONS (Boxes)	SYSTEMS APPROACH TO USA (Boxes)	%
21,600,000	2,459,888	11.4



- Systems approach Cost : US\$ 122,994
- Alternative Cost with MB : US\$ 737,966
- Saving : US\$ 614,972





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## Summary

- **The Systems approach has implementation and inspection costs, but it is more economical than fumigating with methyl bromide**
- **The cold chain is not broken and it avoids impact on the quality of the fruit (better condition/price)**
- **Reduces quality loss during storage and transport**
- **It is environmentally sustainable**



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# Thank you