



## Khapra beetle issue in Australia as an example of containers as a pathway for movement of pests worldwide

- [1] Khapra beetle (*Trogoderma granarium* Everts) is a serious pest of stored grain, nuts, and dry foodstuffs worldwide. Considered native to India, khapra beetle is found throughout the Middle East, Asia, Africa and a few countries in Europe.
- [2] Australia and many other countries have been reporting an increase in khapra beetle interceptions (at their borders) as a hitchhiker pest in imported empty sea containers, sea containers of consignments that khapra beetle previously had no association with, and from countries not known to have khapra beetle.
- [3] Khapra beetle exhibits refuge seeking behaviour; it hides in cracks and crevices, and under floorboards inside a sea container and can remain in diapause for several years, without food, until suitable conditions for development occur, making its detection through visual inspection extremely difficult.
- [4] Understanding previous movements and cargoes of sea containers is essential to identify potentially contaminated sea containers and to manage the risk of khapra beetle in contaminated sea containers. However, there is no single, comprehensive and reliable source of sea container data available that provides global information about past cargoes and movements.
- [5] To understand the extent of potentially contaminated sea containers in the global supply chain, the Australian Government conducted a survey, from April – August 2021, of approximately 2000 randomly selected sea containers imported from both countries where khapra is known to exist and others. The survey involved collecting and testing vacuum dust samples from the interior and exterior of sea containers to determine the potential presence of khapra beetle using molecular technology. Environmental DNA (eDNA) was used to identify whether khapra beetle had been present in a container and environmental RNA (eRNA) was used to indicate whether there were live khapra or recently live khapra in the container.
- [6] Preliminary analysis of samples from the survey indicate that approximately 1% of sea containers entering Australia may be a khapra beetle risk (eRNA), and 11% of containers have evidence of previous presence of khapra beetle (eDNA).
- [7] The preliminary results do not provide sufficient evidence of where and when khapra contamination occurred and reinforce the need to obtain longer-term historical data about previous movements and cargoes of sea containers.

### Recommendation

- [8] Governments and industries should work together to identify global solutions to prevent further contamination and to address potential pre-existing contamination in the global supply chain.