

# **Bio- security risks posed by sea container pathway in Kenya**

Authors: F. koome, T. kosiom, I. Macharia, T. Mutui

Presenter: Koome

Kenya Plant Health Inspectorate Service (KEPHIS), P. O. Box 49592-00100, Nairobi, Kenya. [director@kephis.org](mailto:director@kephis.org)

# Movement of sea container in Kenya

- Kenya has two international sea port – Mombasa and Malindi ports
- The ports serves 7 regional countries
- Kenya's Container Port through put was at 1.2 million TEU in 2017
- It is estimated that the through put in 2022 will be 2million TEU

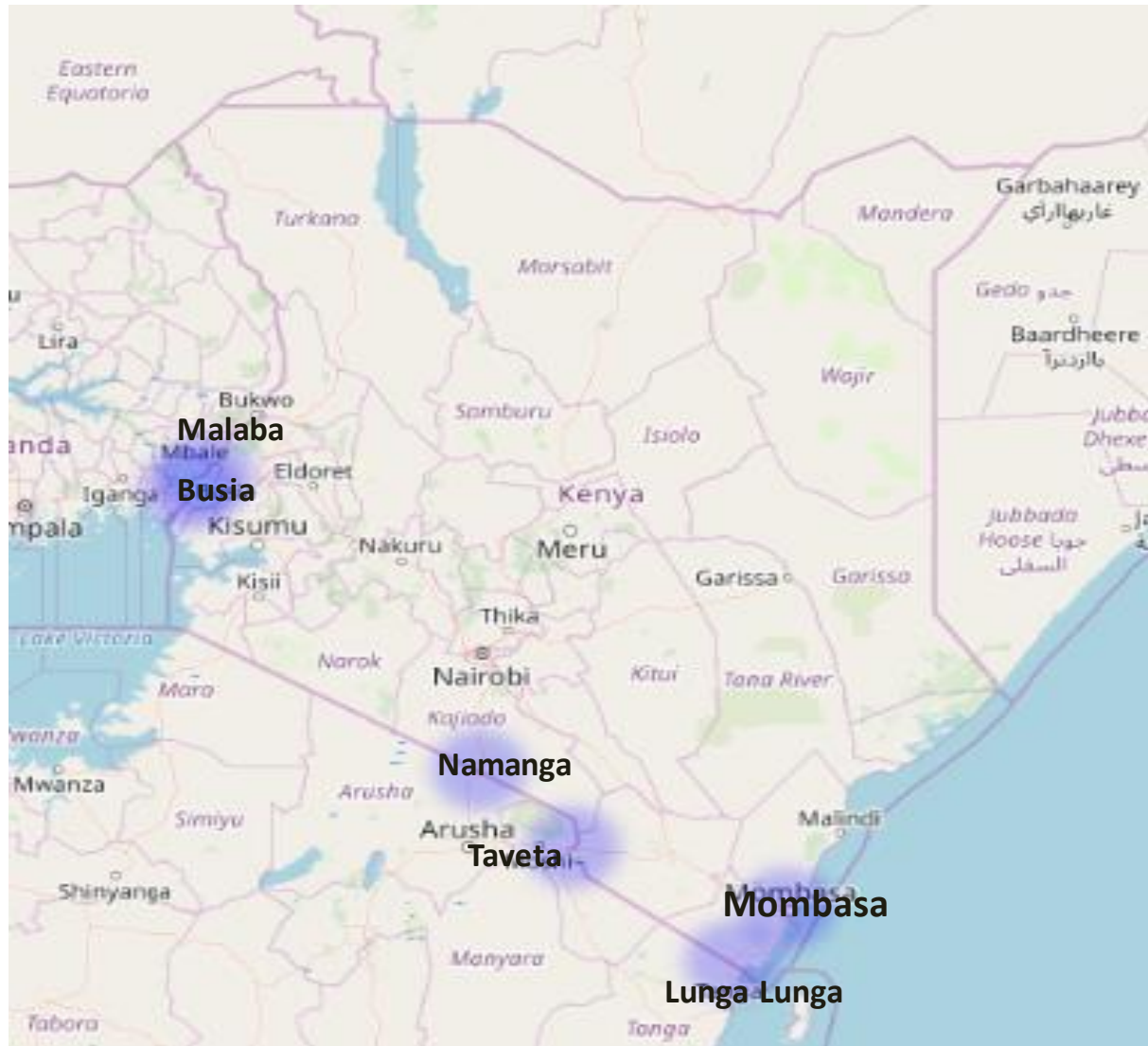
# Survey on sea container cleanness in Kenya

- In 2019 KEPHIS initiated the sea container cleanness survey at the port and boarder points.
- The specific objectives of the survey:
  - ❖ Estimate the nature and the level of bio-contamination in/on sea containers
  - ❖ Determine the overall level of biosecurity risk posed by the sea container pathway in Kenya
  - ❖ Determine the effectiveness of the (CTU) code in management of contamination in sea container

# The survey approach

- The survey is ongoing
- Containers are selected from shipping manifests or boarder container movement schedules
- Inspection to determine the nature, level and location of contamination is being conducted on both internal and external surfaces.
- Data collection is through ODK software based on the questionnaire developed by the IPPC
- Samples are being collected for laboratory analysis

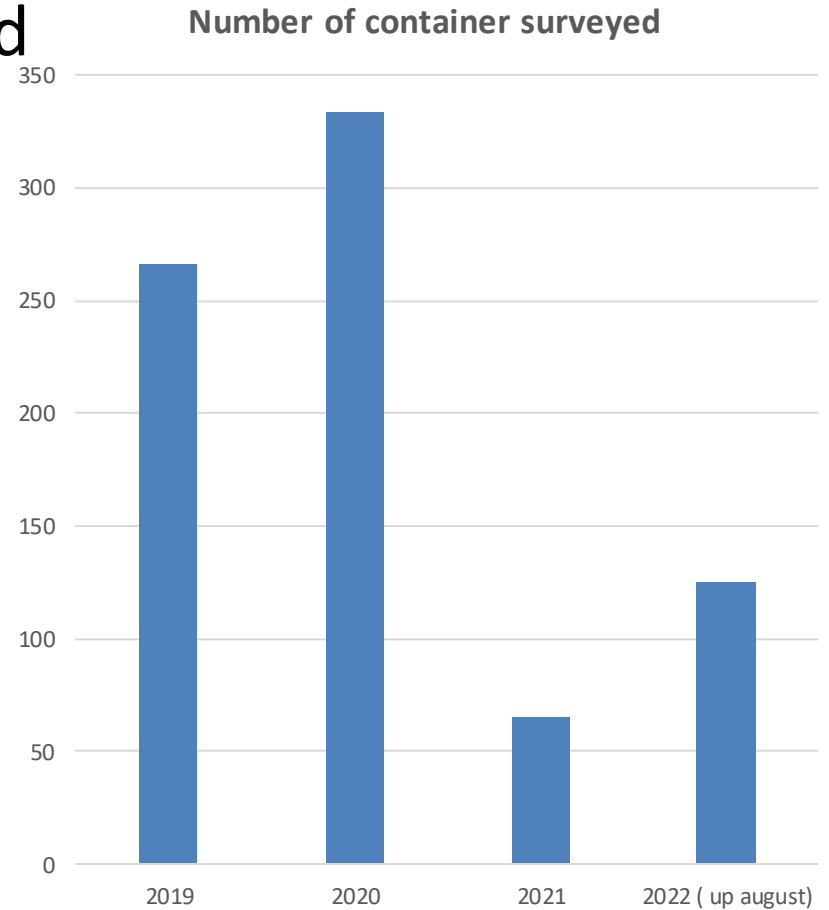
# Survey locations



# Number of containers surveyed

- 789 containers were surveyed between April 2019 to August 2022.
- The containers were imported from 54 countries

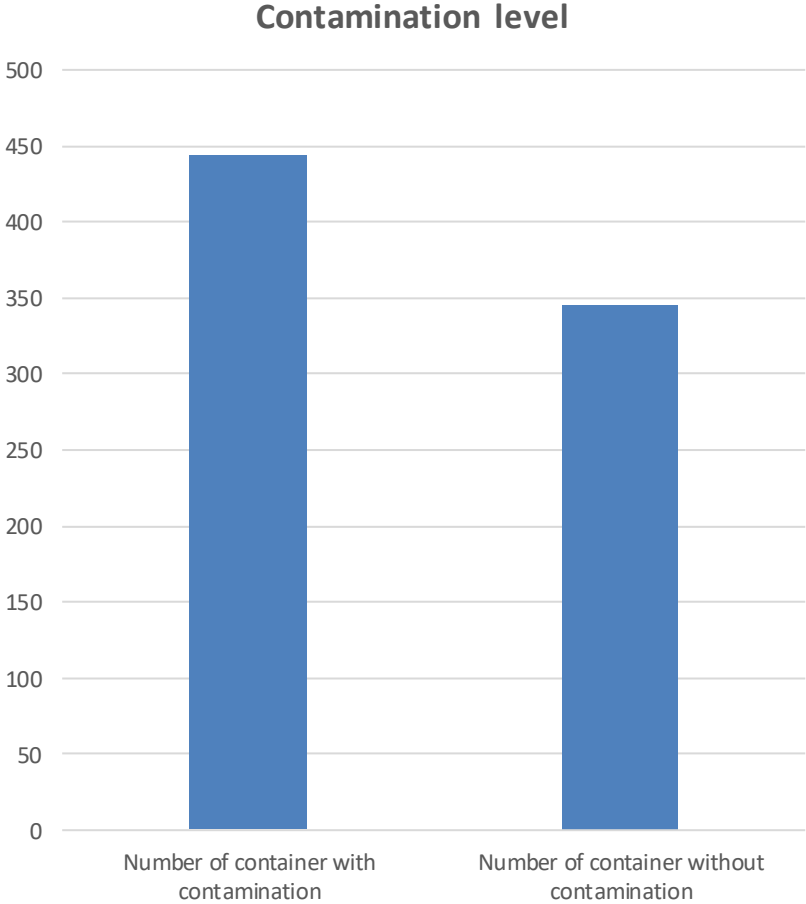
Year	Number of containers surveyed
2019	266
2020	333
2021	65
2022 ( up august)	125
Total	789



# Level of container contamination

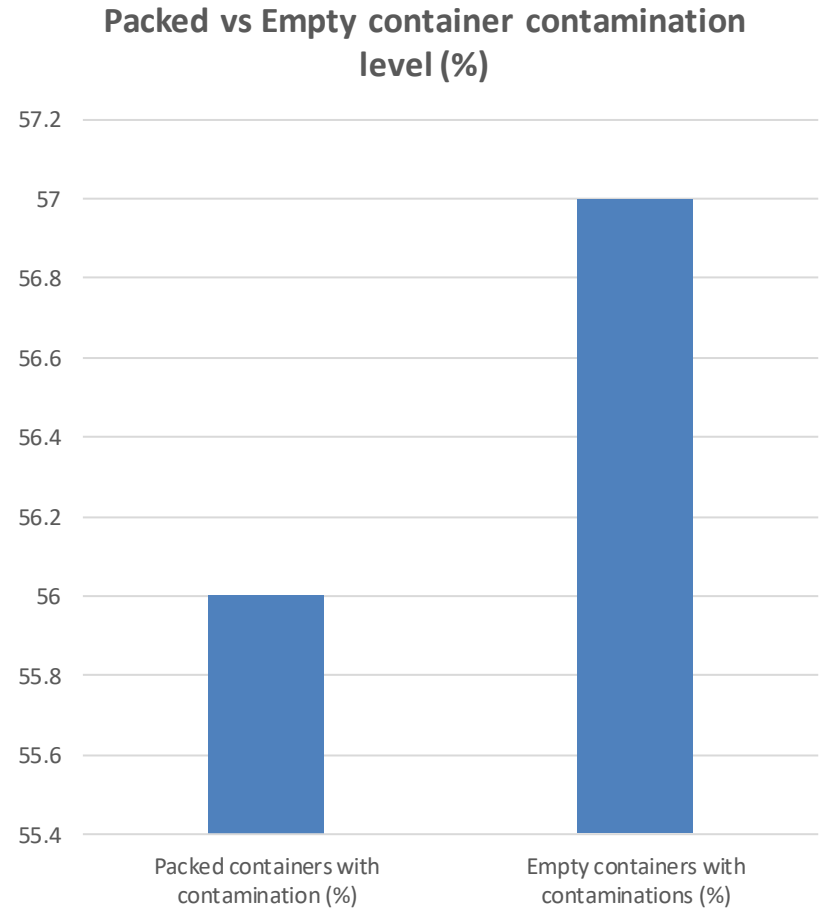
- 56.3% of all the surveyed containers were contaminated

Number of container surveyed	Number of container with contamination	Number of container without contamination
789	444	345



# Contamination levels: Empty vs pack containers

Number of empty containers surveyed	242
Number of packed containers surveyed	547
number of empty container with contamination	138
Number of packed containers with contamination	306
Empty Contamination percentage (%)	57
Packed containers Contamination percentage (%)	56%

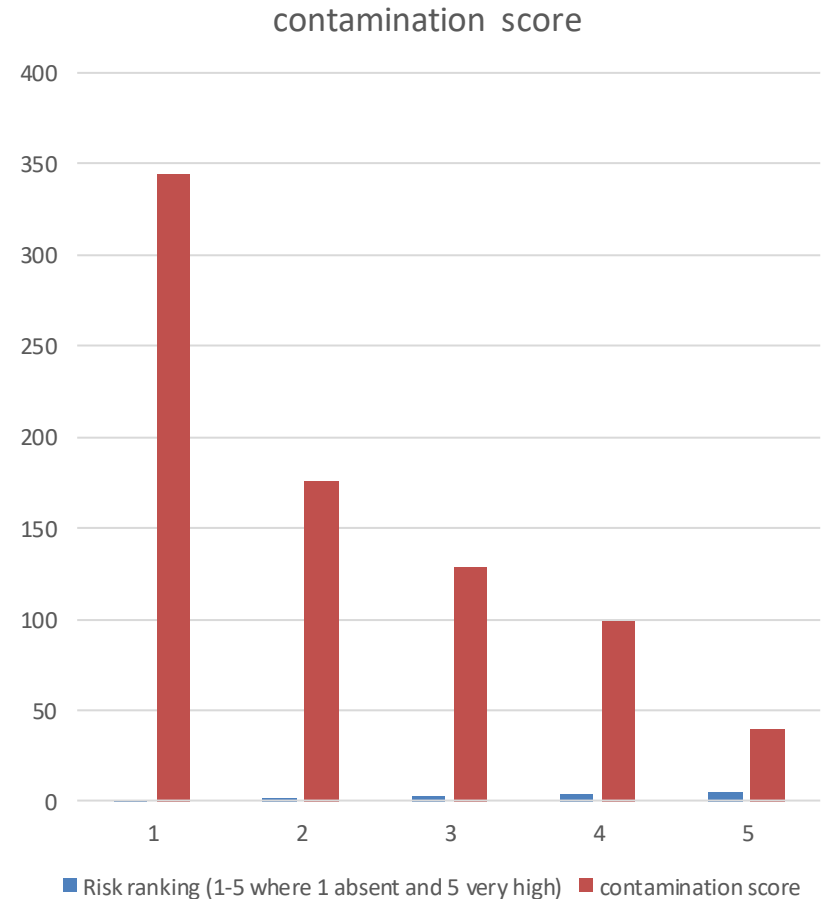




# Contamination score (where 1 is absent and 5 is high risk)

- 5% of the container surveyed had high risk level of contaminations

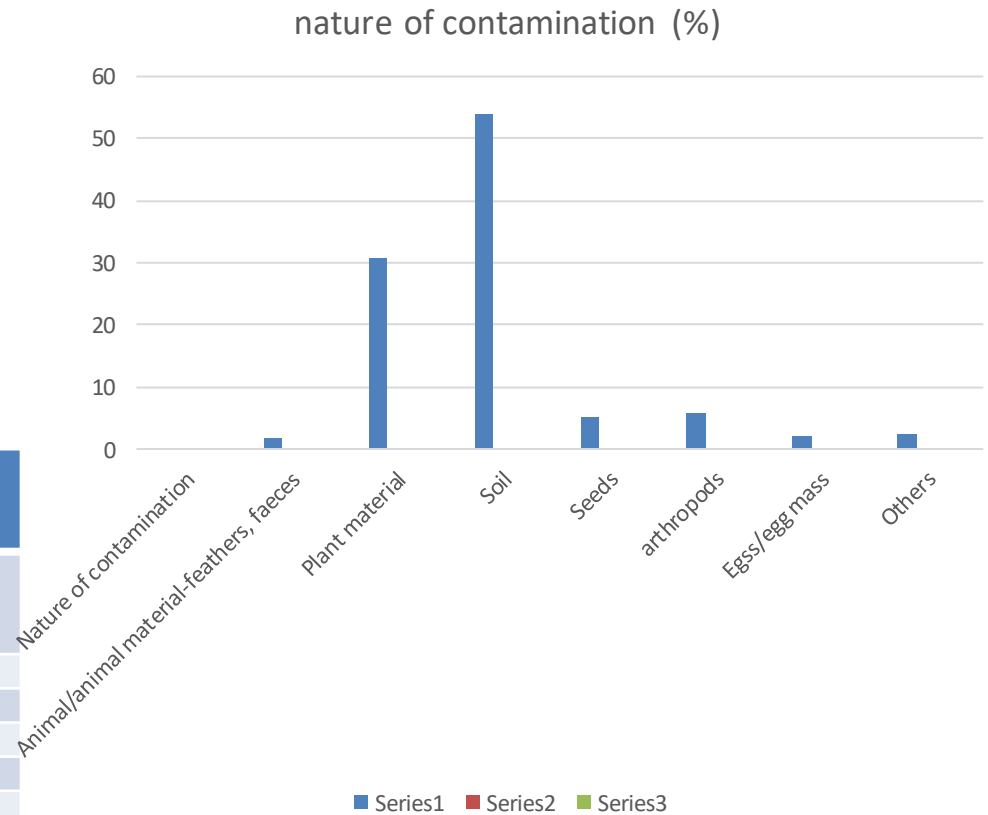
Risk ranking (1-5 where 1 absent and 5 very high)	contamination score	Percentage contamination score (%)
1	345	43.7
2	176	22.3
3	129	16.3
4	99	12.5
5	40	5.0
Grand Total	789	



# Nature of contamination

- Soil highest contaminant- 53.8%, plant materials 30.9%, arthropods 5.8%

Nature of contamination	Number of contaminated containers	Contamination Percentage (%)
Animal/animal material-feathers, faeces	7	1.6
Plant material	137	30.9
Soil	239	53.8
Seeds	22	5
arthropods	26	5.8
Egss/egg mass	9	2.0
Others	11	2.4



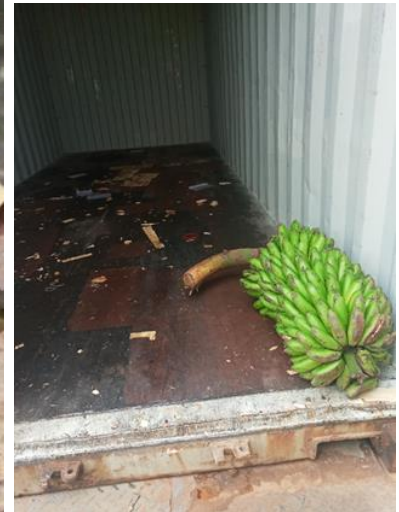
# Results: contamination



# Results: contamination



# Results: contamination on the interior surface



# Results: contamination



# Conclusion

- Full external and internal inspections of all containers on arrival is impractical
- The risks associated with the pathway are diverse and not likely to be adequately mitigated by application of a single measure.
- Current mitigations measures (CTU code) put in place by shipping industry to manage contamination in sea containers are not adequately addressing the challenge.
- Based on the findings of this survey, it is clear that the sea container pathway poses significant plant bio-security risk to Kenya

# Recommendations

- Awareness creation on bio- security risk posed by sea container pathway
- To consider offshore certification of sea container
- Review of CTU code
- Returning containers from regional countries to be cleaned in their respective countries.