The Tangled Web We Weave
human-mediated spread of nematodes via networks

Banks N.C., Hodda M.E., Singh S.K., Paini D.R.,
Bayliss K.L., Tangchitsomkid, N., Chanmalee, T.,
Songvilay, P., Nilandone, N., Thamakhot, S.
World Trade Is Increasing

(WTO Statistics Database, 2014)
Trade Networks in Asia-Pacific Region

http://pacificmedicalsystems.com/prmsold/arts/map2.gif

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Preliminary Results

- 44 different types of crops
- 157 samples
- Nematodes found on 93% crops & 83% samples
- PPN found on 61% crops & 52% samples
**Preliminary Results**

- 16 genera of PPN found
- 9 genera of major economic importance globally (Handoo, 1998)

<table>
<thead>
<tr>
<th>Meloidogyne</th>
<th>Helicotylenchus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pratylenchus</td>
<td>Xiphenema</td>
</tr>
<tr>
<td>Hirschmanniella</td>
<td>Ditylenchus</td>
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<tr>
<td>Rotylenchulus</td>
<td>Criconemella</td>
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<tr>
<td>Paratrichodorus</td>
<td></td>
</tr>
</tbody>
</table>

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Preliminary Results

- General trends
  - No difference between organic vs. non-organic
  - Difference between countries
    - 81% samples (Country 1)
    - 79% samples (Country 2)
    - 40% samples (Country 3)
  - Some int’l imports & exports = mixture
    - (not one source)
Example: Nematode Movement in a Trade Network
Example: Nematode Movement in a Trade Network

national border
Example: Nematode Movement in a Trade Network

national border
Example: Nematode Movement in a Trade Network

continental border

national border

continental border
This Information is Important

http://www.nature.com/nature/journal/v466/n7308/images/466824a-f1.2.jpg

http://www.dailyyonder.com/files/imagecache/story_side/imagefield/12%20Foot%20and%20mouth_0.jpg

http://i.telegraph.co.uk/multimedia/archive/01916/coli_1916224c.jpg

http://telegraph.co.uk/multimedia/archive/01916/coll_1916224c.jpg
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  - MOAF Lao PDR

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