Containment of TR4 in smallholder production systems in Peru
Towards a territorial approach with support of digital mapping

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Outbreak and spread of Fusarium TR4 in Peru

- First case detected and confirmed by SENASA: Chocán, April 2021.
- April 2021 - June 2022: 1,810 valid samples screened; TR4 confirmed on 82 plots, in Querecotillo, Salitral and Marcavelica.

Claudio Márquez, presentation 12 July 2022 mini conference on TR4, Mallares, Sullana
Vulnerability of the banana sector in Peru

- More than 160,000 ha banana and plantains in Peru; consumption of 67 kg per capita/year. **Food security may be at risk ...!**
- Export sector: +/- **10,000 ha** in Chira Valley, Morropón and between Sullana and Piura, all located in the Piura Department.
- Highly **fragmented** sector: +/- 9,000 small farmers organized in around 35 producer organizations, managing **hundreds** of small packing stations and around 40 palettizing centers.
- **Flood irrigation** in the Chira Valley. **Harvesting teams** walk the shortest way to the packing stations ... Risk of further spreading!
- Small and young sector: **incipient** institutional development.
- Local economy ‘floats on banana’: **USD 150 million** gross revenue, **many families** depend *directly* and *indirectly* on the sector.
Biosecurity measures - applicable in the context of Peru?

Para prevenir la dispersión del Foc R4T
¡Entre limpio! ¡Salga limpio!

Medida Reina de prevención
‘Banana farms’ in the Chira Valley: ... 0,5 – 1,0 ha!
What is a ‘territorial approach’ in rural development?

- In the economic dimension: extend the concept of competitiveness to a whole territory, at an appropriate spatial and sociopolitical scale. Take advantage of the strengths, opportunities and local assets, to link a region successfully to highly rewarding markets.

- In the environmental dimension: apply a landscape approach in the sustainable management of watersheds, soils, forests, biodiversity, ecosystem services. Rural development is highly dependent on this natural capital!

- Local institutions play an important role in creating an enabling environment: promote investments in research, innovation, education, infrastructure, platforms for public-private collaboration, connectivity, culture ...., etc. ‘Cooperating to compete’.
Towards a territorial approach to cope with TR4

- With arrival of TR4, not only the *competitiveness* but the *survival* of the export sector is at stake; and in the long run, *food security*.
- Develop a ‘*territorial vision*’ on biosecurity: from the banana plant to the plot, groups of plots, to banana zones and to *entire landscapes*.
- **Biosecurity** with a territorial approach, *zonification*, at **two levels**:  
  (1) **groupings of banana plots** and **banana plantations**, sharing access roads, irrigation canals etc.: responsibility of **banana companies** and **producer associations**; and  
  (2) in the **public domain**, on roads, ports, airports, frontiers etc., responsibility of **SENASA**, Regional and Local governments.

- Requires **collaboration** between the **public** and the **private** sector.
- Requires **collaboration** between **producer organisations**.
Biosecurity - territorial approach: digital mapping as tool

- Mapping project: **collaboration** between several companies, institutions and organizations.
- **WhatsApp** group, 85 members.
Digital mapping, step 1: define area to be mapped (1)

- Global banana mapping project University of Exeter, UK.
- Detection of 0,25 ha compact area banana plantations.

- Chira Valley, and the middle Piura river basin ↑
- Province of Morropón →
Digital mapping, step 1: define area to be mapped (2)
Digital mapping, step 2: flight plan, technical aspects

- Small Cessna airplane, equipped with a 36,6 megapixels camera; 2000 feet (700 m).
- 34 flight zones of +/- 3000 ha; total area covered: 100,000 ha.
Digital mapping, step 3: uploading images to the platform

- Digital platform with menu, accessible with user name and password.
Digital mapping, step 4: presentation of results (1)

- **Visualization** of topography, access roads, canals, plantations, packing stations ..., **highly detailed**.

- **Workshops**: on 3 December 2021, 5 May 2022; mini conference **12 July** 2022; technical workshop 15 July.
Digital mapping, step 4: presentation of results (2)

- 'Area of interest': destruction of banana plants? Ash, trenches ...
Low-lying areas: accumulation of water. Zone intervened by SENASA (tapped with blue plastic). Is there a relationship between lack of drainage and susceptibility to TR4 ...?
Digital mapping, step 4: presentation of results (4)

- Compare changes over time - banana farm, 24 September 2021
Digital mapping, step 4: presentation of results (5)

- Same banana farm, 1 July 2022: observe the affected areas ...
Digital mapping, step 5: joint risk analysis per zone (1)

- With support of the digital map: \(\rightarrow\) zonification, define ‘Territorial Exclusion Units’: groupings of plots sharing the same access roads, sharing a common packing station, the proximity of a community, etc.
- These banana plots may belong to different producer associations – requires close collaboration.
- Involve technicians of SENASA and local governments, communities!
- Consider these Units as ‘a banana farm’. Apply a joint risk analysis, for example using the TR4 Add-on of GlobalGAP.
- Analyse ‘on-farm’ risks and risks in the surroundings – irrigation canals, communities, access roads, movement of people and vehicles, etc.

[https://www.globalgap.org/uk_en/for-producers/globalg.a.p.-add-on/tr4-biosecurity/](https://www.globalgap.org/uk_en/for-producers/globalg.a.p.-add-on/tr4-biosecurity/)
Digital mapping, step 5: joint risk analysis per zone (2)

- Community
- Irrigation canal
- Access roads
- River
- Intervened areas

RIESGOS VECINOS
- Ingresos / circulación
- Zonas pobladas
- Cercanía rio
**Digital mapping, step 6: define biosecurity measures**

- With support of the digital map: for each Territorial Exclusion Unit, define **realistic** biosecurity measures, **joint efforts** and investments with **economies of scale** and shared responsabilities; e.g. **footbaths** at the entry of access roads, **living fences** for certain sectors ..., etc.

- Involvement of Public Sector (SENASA) and local governments: negotiate **public investments**, e.g. disinfection facilities for vehicles on main access roads. Awareness raising in communities.
Mini conference on strategies to cope with TR4

- Tuesday 12 July, INIA, Mallares, Sullana
Learning workshop for technicians on the digital platform

- Friday 15 July, producer organisation APBOSMAM, Marcavelica
Perspectives? - Concluding remarks

- The observed ‘relaxed attitude’ (= underestimation, denial) towards TR4 is making place for a more realistic perception of the threat.
- Consensus on the need for stronger collaboration between SENASA, INIA, private sector and producer organisations.
- Multi-stakeholder meetings every 3 - 4 months, agreed on the mini conference 12 July in Mallares; to coordinate and lead strategies.
- Pilots in territorial biosecurity measures by DOLE and APPBOSA.
- Promotion of healthy soils by the CLAC – another defence line.
- Will a territorial approach be helpful? Will the digital map be useful for joint risk analysis and promotion of biosecurity measures?
- Could the digital map also be instrumental to promote cross-sectoral collaboration and build up social capital to cope with TR4 ....?
... only time will tell ... 

Thanks, gracias