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# First report on infection of *Eucalyptus pellita* seeds by *Ralstonia solanacearum*

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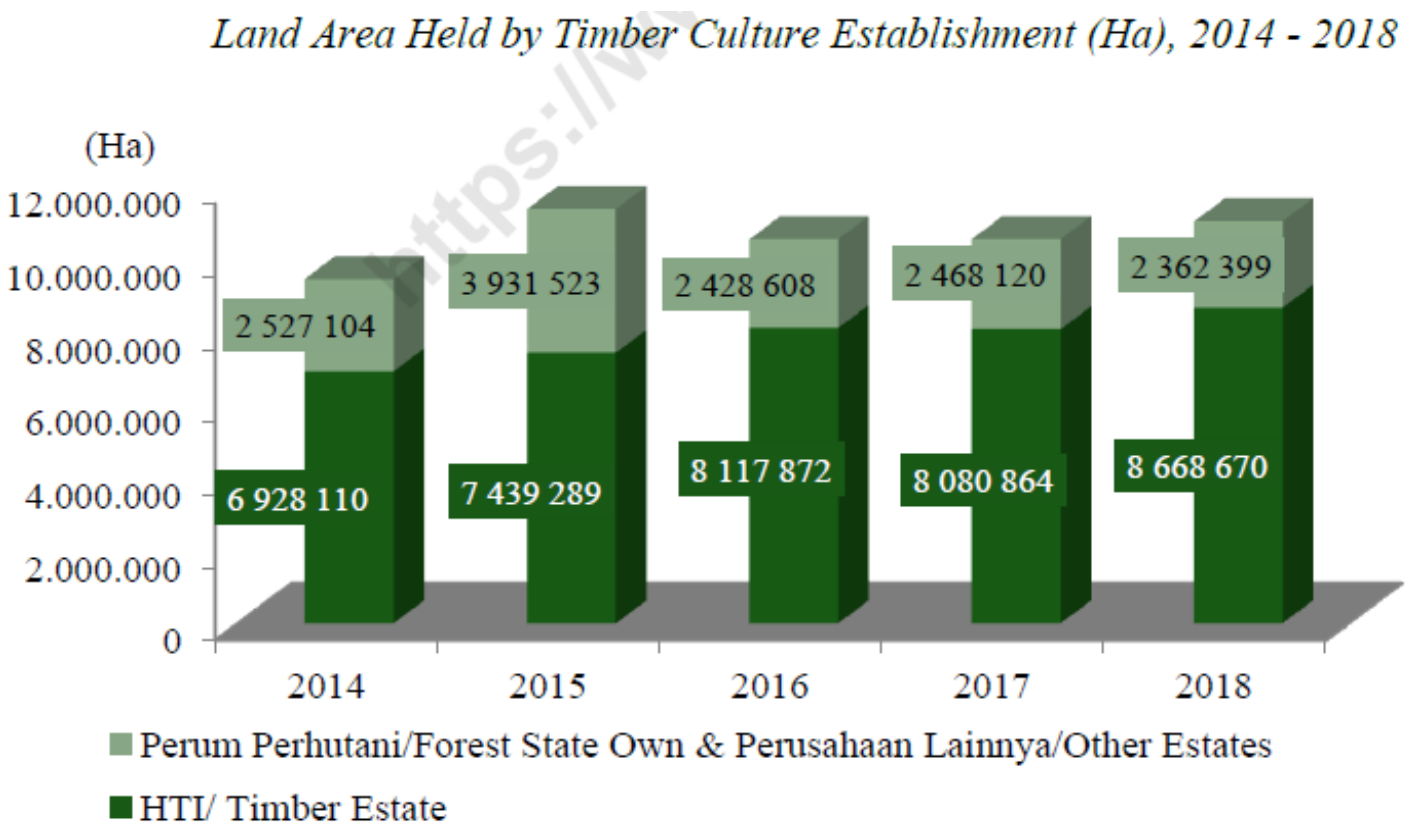
# INDONESIAN FOREST PLANTATION




Main Commodities: *Acacia*, *Eucalyptus*, *Shorea* spp.,
Teak, Pine, Mahogany

Photo by : foresteract.com

Forest plantations are able to reduce pressure on natural forests, quickly fix carbon and stimulate the restoration of natural vegetation.

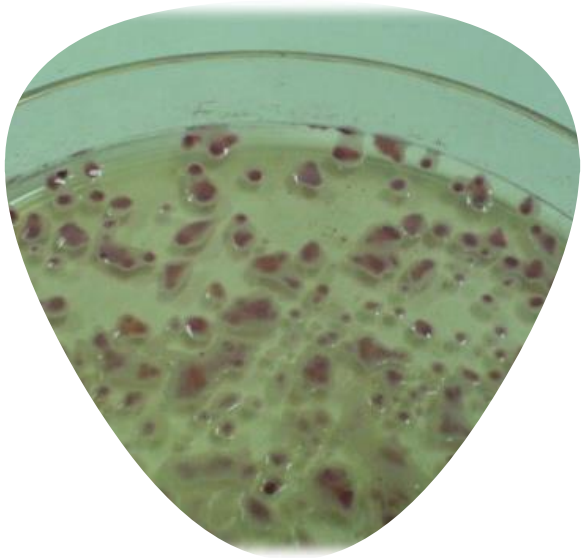
Sumber : BPS 2019

**Monoculture plantations are challenged to sustainably manage pest and disease risks.**

- *Ralstonia solanacearum* is the main pathogen in many agricultural plants.
- It may cause significant losses on eucalyptus and was yet to be proven as a seed-transmitted pathogen.

- This study aims to provide evidence of the existence of the *R. solanacearum* bacterium on or in *E. pellita* seeds.

# The Experiments



## CONVENTIONAL DETECTION

Direct detection from seeds using universal and selective-media

## NURSERY TEST

Detection on symptomless seedlings

## MOLECULAR Enrichment-PCR

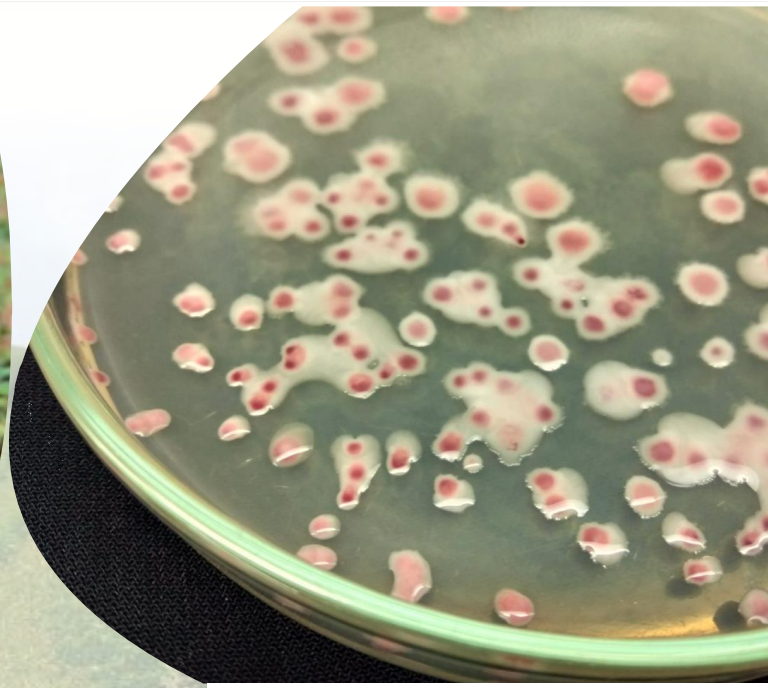
PCR detection from seeds using *Ralstonia*-species complex specific primers

**Bacterial wilt infection in eucalyptus seedlings is latent infection**

# Nursery Test

- Infection rate of symptomless seedlings by *Ralstonia* varies between 7 and 42%.
- These findings indicate the potential of bacterial wilt disease to be transmitted through seeds.

**Symptomless seedling**



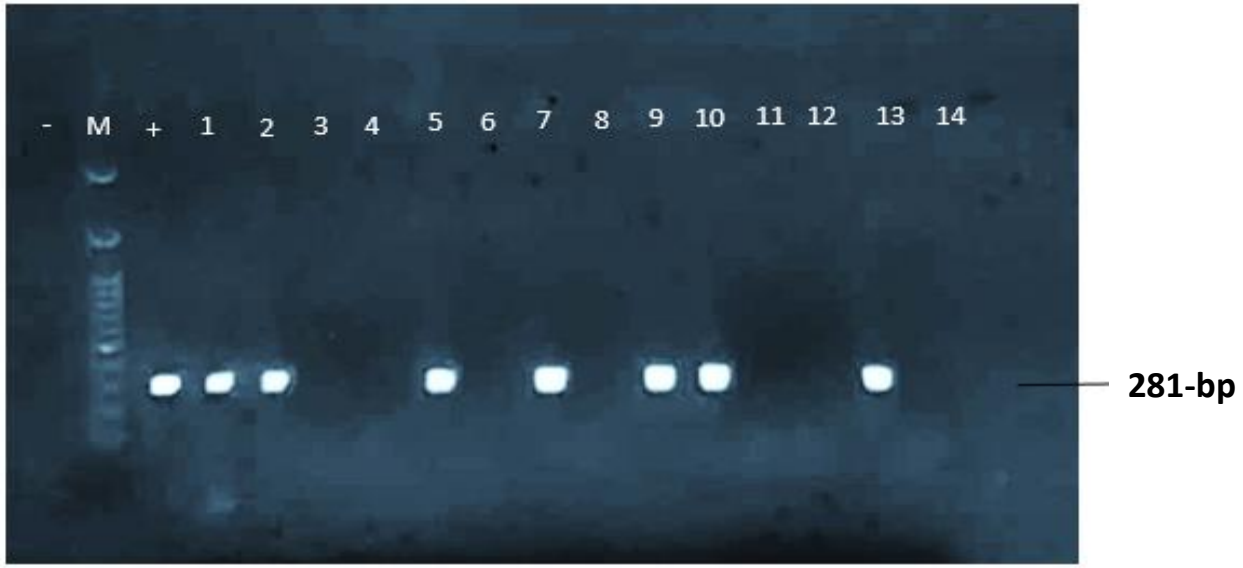
***Ralstonia* in TZC medium**

| Seed Lot Number | Infection rate (%) |
|---|---|
| **12073** | 42.4 |
| **12074** | 6.7 – 36.7 |
| **12075** | 8.6 – 19.7 |
| **12076** | 8.3 |

# Enrichment-PCR Results of *Ralstonia* detection from *E. pellita* seeds

| Seed Lot Number | En-PCR Result[1] | |
|---|---|---|
| | Surface | Endosperm |
| EP15216AA5 | + | + |
| EP15215AA5 | - | - |
| EP15219AA5 | + | - |
| EP15214AA5 | + | - |
| EP15218AA5 | + | + |
| EP15217AA5 | - | - |
| EP15211AA5 | + | - |

[1] + : *R. solanacearum* is positively detected using En-PCR.




A positive result was determined from the position of the band matching the expected product length.

Two of the seven seed lot samples with surface-sterilization treatment were positive, an indication that the bacterial inoculum was present both on the surface of and inside the eucalyptus seeds (endosperm).

# *Conclusion*

R. solanacearum *can be detected from eucalyptus seeds using universal and selective media in the laboratory, nursery test, and molecular-based detection using the enrichment-PCR method.*

*The bacterial inoculum is also proven to exist both on the surface of and inside the eucalyptus seeds.*

*This is the first report that* R. solanacearum *is a seed-borne pathogen in* E. pellita *seeds.*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Thank You