

# Effectiveness of agroecological practices in controlling bacterial wilt caused by *Ralstonia solanacearum* on solanaceous crops: a meta-analysis

Moukaïla Bagri Bouraïma\*, Charles Biielders, Rachidatou Sikirou, Ezin Vincent Awe, Bonaventure Cohovi Ahohuendo, Enoch Achigan-Dako

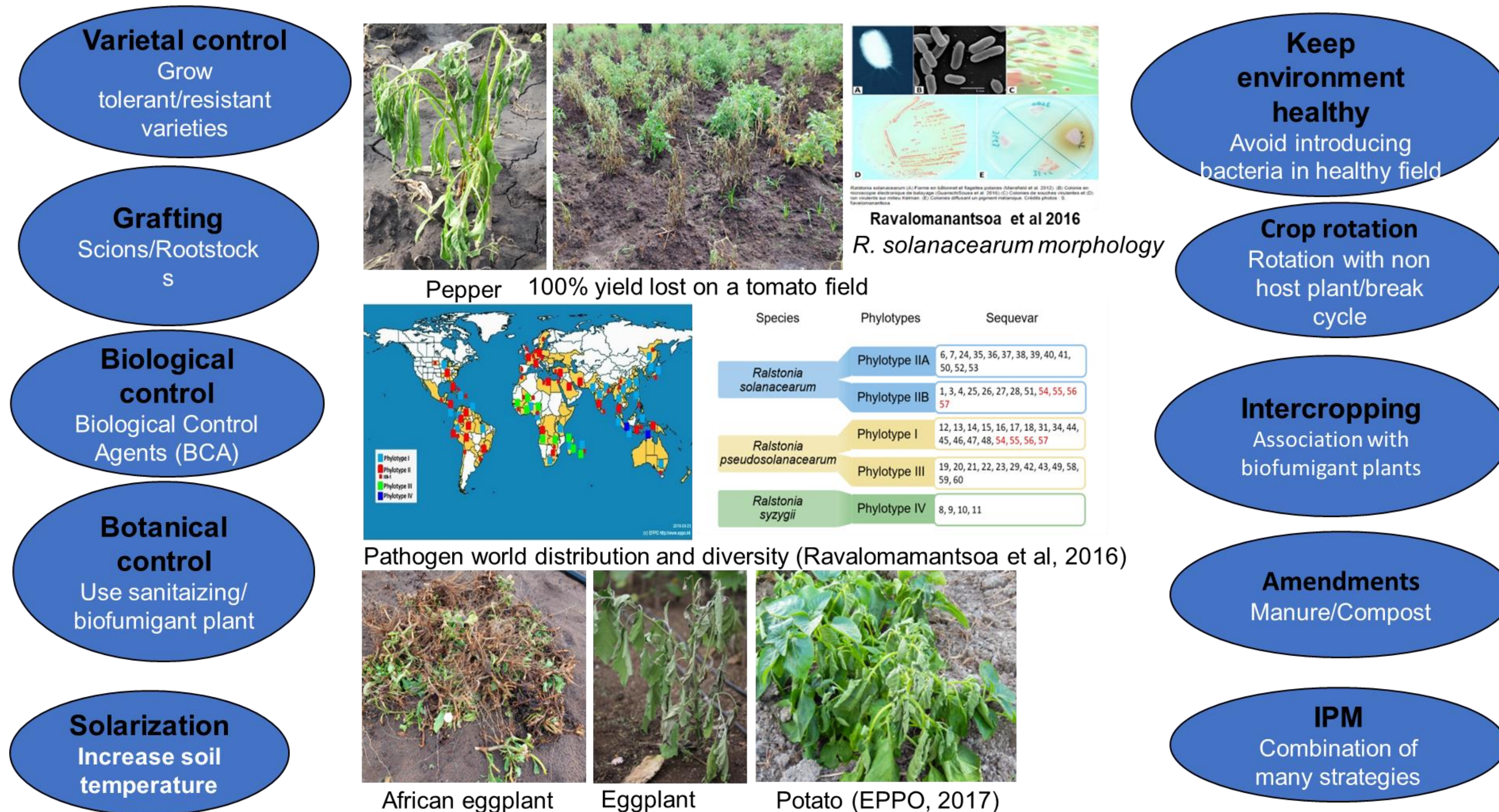
\* Corresponding author: [bagrimoukaila@gmail.com](mailto:bagrimoukaila@gmail.com)



## Background

**Key issue:** Which agroecological methods are more effective in *Ralstonia solanacearum*'s wilt disease management on solanaceous crops?

### Bacterial wilt disease on solanaceous crops in the world



## Methodology

• 670 pairs of data were collected from 48 papers selected using the PRISMA approach on Scopus, Web of knowledge, and Google scholar.

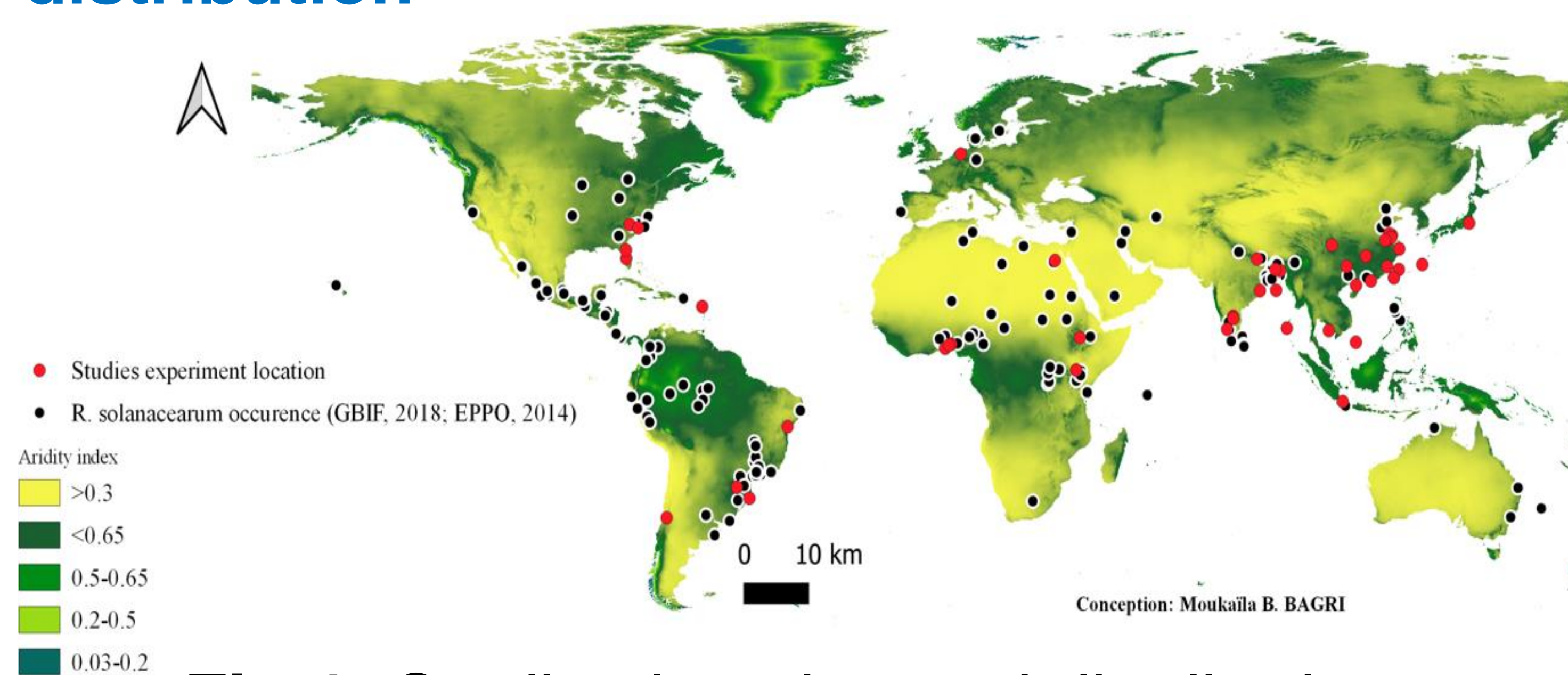
• Bacterial wilt incidence (BWI) and crops yield effect size was calculated as  $\ln(\text{treatment mean} / \text{control mean})$  (Gurevitch and Hedges, 1999).

• Data quality assessment: trim-and-fill funnel plot (Stern et al, 2011; Duval and Tweedie, 2000).

• Subgroup analysis was performed to compare the bacterial wilt management method through BWI and yield effect size (ES) (Hedges et al, 1999).

## Results

### • Studies included in the database and their distribution



**Fig.1:** Studies location and distribution

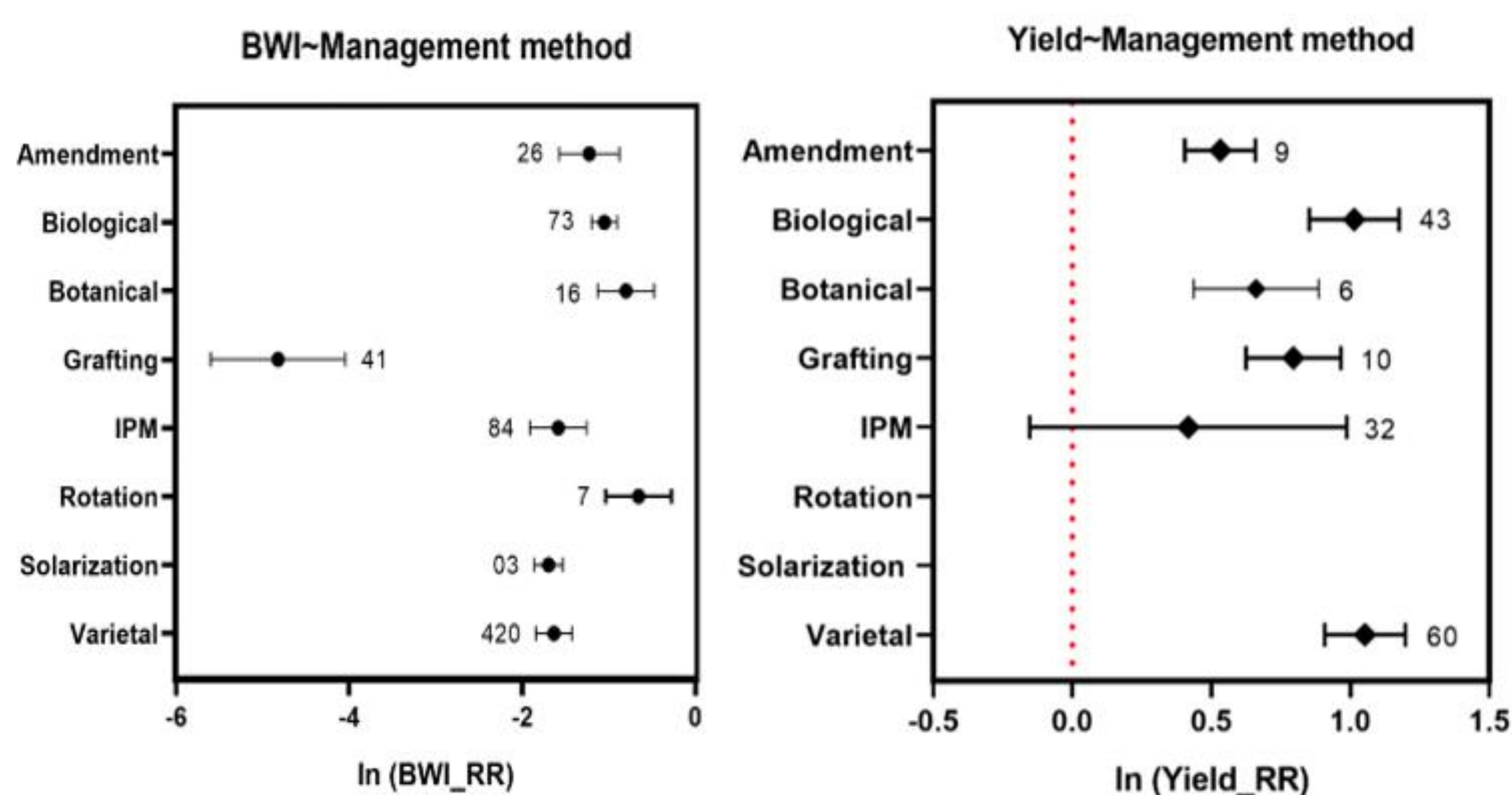
### • Data quality assessment

• Trim-and-fill funnel plot confirmed the absence of publication bias on data collected.

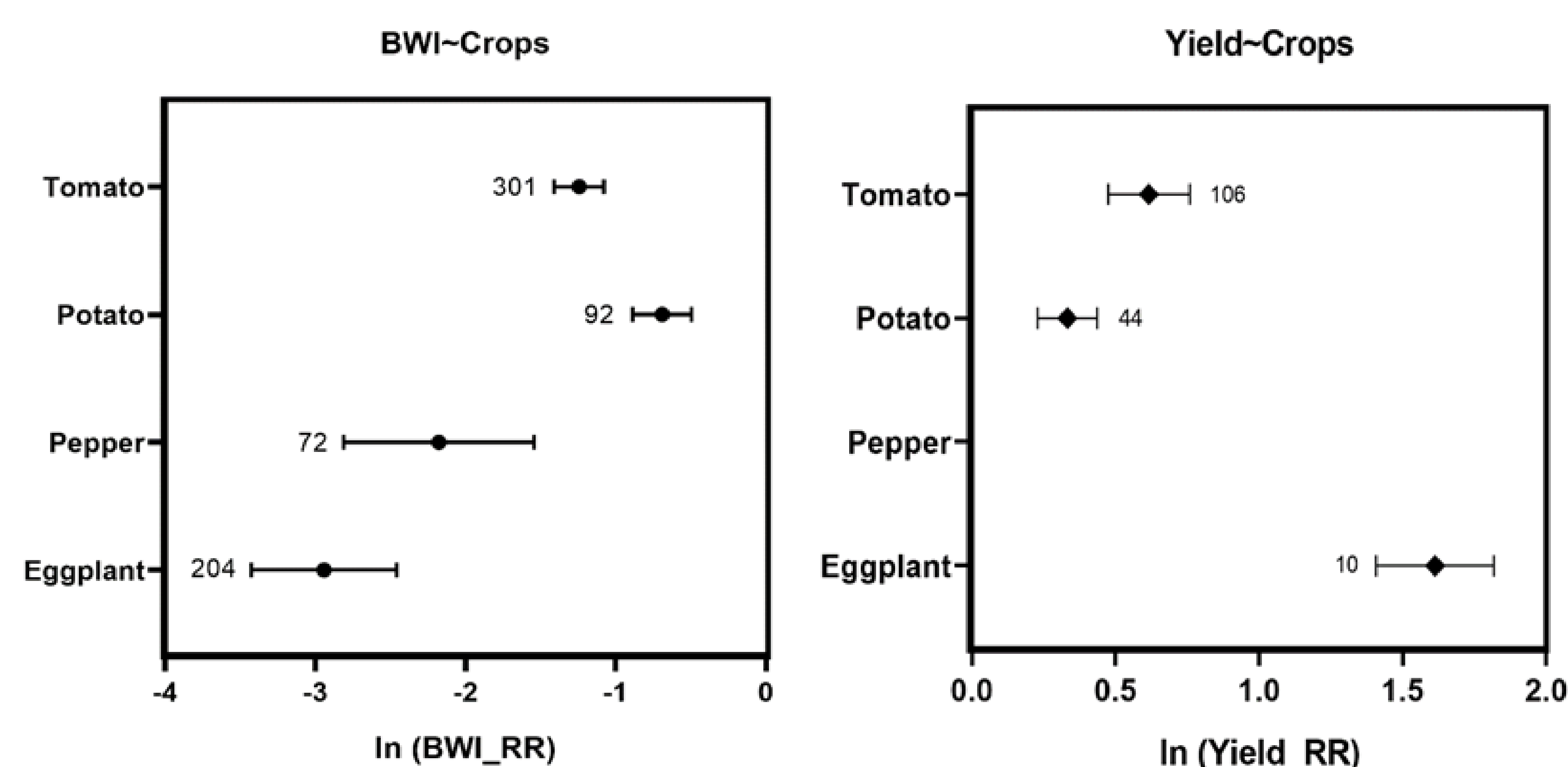
## Conclusion

- Most studies must be done in Africa in a station or fields where it is little study;
- Grafting, biological and varietal control must be promoted as a better agroecological BW management method;
- Efforts are more needed in controlling this bacteria in tomatoes and potato cropping systems;
- Potentiality of other management such keep environment health must also be explored;

### • BWI and yield effect size subgroup analysis



**Fig.2:** BWI and yield effect size (ES) as affected by BW management method



**Fig.3:** BWI and yield effect size (ES) as affected by crops