

## Potential for Biological Control of Postharvest Fungal Rot of White Yam (*Dioscorea rotundata* Poir) Tubers in Storage with *Trichoderma harzianum*

**Authors :** Victor Iorungwa Gwa, Ebenezer Jonathan Ekefan

**Abstract :** Potential of *Trichoderma harzianum* for biological control of postharvest fungal rot of white yam (*Dioscorea rotundata* Poir) tubers in storage was studied. Pathogenicity test revealed the susceptibility of healthy looking yam tubers to *Aspergillus niger*, *Botryodiplodia theobromae*, and *Fusarium oxysporum* f. sp. *melonganae* after fourteen days of inoculation. Treatments comprising *A. niger*, *B. theobromae*, and *F. oxysporum* each paired with *T. harzianum* and were arranged in completely randomized design and stored for five months. Experiments were conducted between December 2015 and April 2016 and December 2016 and April 2017. Results showed that tubers treated with the pathogenic fungi alone caused mean percentage rot of between 6.67 % (*F. oxysporum*) and 22.22 % (*A. niger*) while the paired treatments produced only between 2.22 % (*T. harzianum* by *F. oxysporum*) and 6.67 % (*T. harzianum* by *A. niger*). In the second year of storage, mean percentage rot was found to be between 13.33 % (*F. oxysporum*) and 28.89 % (*A. niger*) while in the paired treatment rot was only between 6.67 % (*F. oxysporum*) and 8.89% (*A. niger*). Tubers treated with antagonist alone produced 0.00 % and 2.22 % in the first and second year, respectively. Result revealed that there was a significant difference ( $P \leq 0.05$ ) in mean percentage rot between the first year and the second year except where *B. theobromae* was inoculated alone, *A. niger* and *T. harzianum* paired and *B. theobromae* and *T. harzianum* paired. The most antagonised fungus in paired treatment for both years was *F. oxysporum* f. sp. *melonganae*, while the least antagonised, was *A. niger* and *B. theobromae*. It is, therefore, concluded that *T. harzianum* has potentials to control rot causing pathogens of yam tubers in storage. This can compliment or provide better alternative ways of reducing rot in yam tubers than by the use of chemical fungicides which are not environmentally friendly.

**Keywords :** biological control, fungal rot, postharvest, *Trichoderma harzianum*, white yam

**Conference Title :** ICSAT 2020 : International Conference on Sustainable Agriculture Technologies

**Conference Location :** Kuala Lumpur, Malaysia

**Conference Dates :** August 21-22, 2020