Sunee Khumpun 2014: Screening for Endospore Forming Bacteria Potentially Increase Straw Mushroom Yield. Master of Science (Microbiology), Major Field: Microbiology, Department of Microbiology. Thesis Advisor: Mrs. Yaovapa Aramsirirujiwet, Ph.D. 176 pages.

Twenty-two isolates of the endospore-forming bacteria were isolated from the mushroom farm and mushroom substrate. The isolated bacteria were tested for their antagonistic with plant pathogenic fungi, the competitive fungi in mushroom farm and the straw mushroom cultures using dual culture method. The result found that eight bacterial isolates; BC01, BC02, BC03, BC05, BC06, BF02, BF04 and MK07 could produce high inhibition efficiency. The isolated bacteria were identified. The result indicated that 8 bacterial isolates were closely related to *Bacillus subtilis*. Three bacterial isolates (MA02, MK02 and MK05) which showed low inhibition efficiency were clearly identified as *Bacillus thuringiensis*. The next experiments were done in the field of mushroom farm to find out the best condition for bacterial cultures preparation. We found that the treatment which prepared with cultivated bacteria in nutrient broth and shaked for 24 hours (suspension) and cell pellet could gain highest straw mushroom yield when compared with another treatments. Ten bacterial isolates (BC01, BC02, BC03, BC05, BF02, BF04, MK07, MA02, MK02 and MK05) were cultivated in nutrient broth and shaked for 24 hours, which gave bacterial cells about 10^7 - 10^8 cfu/ml and bacterial cell suspension were sprayed on the straw mushroom substrate before inoculated the mushroom culture. One liter of bacterial suspension per 4 m^2 of mushroom cultivated areas. The result showed that most of the bacterial treated areas provided higher mushroom yield, especially when treated with bacterial strain BC05 and the contamination from the competitive fungi was also decrease. The mushroom yields were done statistical analysis. The results showed no significant difference ($p>0.05$) of the straw mushroom yields between bacterial spraying treatments and control. The result was still variable might due to the environmental factor which may took an important role to the mushroom production in mushroom farm. Interestingly, we found that the competitive fungi in mushroom farm were decrease which indicated the endospore-forming bacteria may affect to the competitive fungi.

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