

Wanich Tongnapiang 2015: Efficacy of *Trichoderma harzianum* 01-52 as Pellet Bioproduct Combined with Brassinolide for Promoting Plant Growth, Increasing Yield and Reducing Dirty Panicle of Rice var. RD31. Master of Science (Agricultural Research and Development), Major Field: Agricultural Research and Development, Faculty of Agriculture at Kamphaeng Saen. Thesis Advisor: Associate Professor Chiradej Chamswarn, Ph.D. 85 pages.

Brassinolide (Br) is a brassinosteroid group which affects the enhancement of plant tolerance against various stresses, promoting growth and increasing yield of many plants such as rice, wheat and corn. Laboratory investigation revealed that brassinolide at 0.05 ppm promoted the mycelial growth and spore production of *Trichoderma harzianum* 01-52 (T01-52) on potato dextrose agar (PDA). Under net house condition, pellet bioproduct of T01-52 (100g/100l) in combination with brassinolide at 0.05 ppm significantly promoted plant and root growth of rice (var. RD31) as compared to the control. Efficacy test of bioproduct and brassinolide was conducted under rice field conditions in Nakhon Pathom Province during August to November, 2012 (in season rice) and March to June, 2013 (off season rice). Rice seeds (var. RD31) were soaked in T01-52 spore suspension (100g/100l) in combination with 0.05 ppm brassinolide and sprayed with T01-52 spore suspension (100g/80l or 1,600 m²) on the whole rice plants for three times, at 50, 65 and 80 days after planting (Tsk+Bsk+Ts(3)). For another treatment, rice seeds (var. RD31) were soaked in T01-52 spore suspension (100g/100l) and sprayed with T01-52 spore suspension on the whole rice plants for three times (Tsk+Ts(3)). Both treatments of both seasons, could reduce the percentages of dirty panicle disease on the whole panicles by 14.84%, 14.68% and 30.98, 29.02%, respectively. These efficacies were comparable to use of hexaconazol 5% WV EC (1st spray) in combination with propiconazole+prochloraz 49% WV EC (2nd and 3rd sprays). Both treatments also increased rice yield/rai by 5.83, 7.41% and 26.48, 14.95% which provided the increase of sale prices by 803.68, 941.28 and 2,795.58, 1,578.72 baht/rai, respectively. Moreover, the treatment with T01-52 and brassinolide soaking seeds and T01-52 spraying (Tsk+Bsk+Ts(3)) increased the cleaned fertile seeds by 21.86 and 34.92% and reduced the percentages of dirty panicle infected seeds by 0.18 and 64.46%, when compared with the control treatment, respectively. After milling for brown rice, the percentages of whole kernels were increased by 31.84 and 22.94% while the percentages of broken kernels were reduced by 51.95 and 58.48%, respectively when compared with the control treatments.

Student's signature

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