

Chaiya Boonlert 2011: The Influences of Slow Release N-fertilizer on Growth of Asparagus (*Asparagus officinalis* L.) and Nitrifying Bacteria. Master of Science (Soil Science), Major Field: Soil Science, Department of Soil Science. Thesis Advisor: Associate Professor Thongchai Mala, Ph.D. 86 pages.

The study was carried out with asparagus (Brock's Improve) in greenhouse in completely randomized design with 4 replications. The experiment composed of 13 treatments; 1) control 2) one time application of urea at 12 kg N/rai (U_{12-1}) 3) two times application of urea at 12 kg N/rai (U_{12-2}) 4) one time application of urea at 24 kg N/rai (U_{24-1}) 5) two times application of urea at 24 kg N/rai (U_{24-2}) 6) one time application of urea at 48 kg N/rai (U_{48-1}) 7) two times application of urea at 48 kg N/rai (U_{48-2}) 8) one time application of floranid at 12 kg N/rai (F_{12-1}) 9) two times application of floranid at 12 kg N/rai (F_{12-2}) 10) one time application of floranid at 24 kg N/rai (F_{24-1}) 11) two times application of floranid at 24 kg N/rai (F_{24-2}) 12) one time application of floranid at 48 kg N/rai (F_{48-1}) and 13) two times application of floranid at 48 kg N/rai (F_{48-2}). The results showed that the soil growing medium of floranid treatments had higher ammonium nitrogen than those of urea treatments after applying 30 days. The released nitrate nitrogen from urea was initially appeared very fast, but tended to decreased with time. The floranid fertilizer initially released the small amount of nitrate nitrogen, later its trend was increased up to 60 days after application and then declined. The total nitrogen and soil available P was highest at 0.26 % and 468.24 mg/kg in F_{48-1} treatment, while, the maximum exchangeable K (1,639.08 mg/kg) was found in F_{48-2} treatment. The number, size and fresh weight of asparagus spear among treatments were highly significant. In the first round harvest, The spear fresh weight from floranid treatments was not different from that of urea treatments. On the contrary, the number, size and fresh weight of spear of floranid treatments in the second round harvest was higher than that of urea treatments. The maximum number, size and fresh weight of asparagus spear was found in F_{24-2} treatment at 10.25 spear/plot, 0.5 cm. and 25.65 g/plot. The nitrogen content of the above ground stem in floranid treatments was higher than that of urea treatments. The maximum nitrogen contents was found in F_{48-1} treatment (2.59%). While, the maximum P (0.13 %) and K (2.84 %) contents were found in F_{12-2} treatment. Urea treatments had higher nitrifying bacteria than those of floranid treatments in 20, 30 and 40 days after application, but, at 50 and 60 days after application, floranid treatments had higher nitrifying bacteria than those of urea treatments. The quantity of nitrifying bacteria increased as nitrogen fertilizer rate increased.

Student's signature

Thesis Advisor's signature