

Amino acid-derived urease inhibitors promote root growth in *Pennisetum glaucum* and increase nitrogen uptake⁽¹⁾

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Resumo — The use of urea fertilizer with no proper soil management leads to economic and environmental losses due to ammonia volatilization. Thus, new strategies must be sought to improve the efficiency of fertilization, such as the use of urease inhibitors to slow down urea hydrolysis to ammonia and carbon dioxide and increase the offer of mineral N to plant roots over time. This work aimed to investigate the effect of new urease inhibitors on the development of *Pennisetum glaucum* (Pearl millet). The plants were grown in a greenhouse for 35 days in pots containing dystrophic red Latosol soil, in the presence of urea (150 mg of N/Kg of soil) supplemented with the new amino-acid derivatives urease inhibitors D-106 or D-Ac106 at 0.06% or 1% (w/w). *N*-(butyl) thiophosphoric triamide (NBPT) was used as a reference urease inhibitor and plants treated with urea only were used as control. The presence of urease inhibitors increased the N amount in shoots by up to 40% in comparison to control plants. Moreover, both D-106 and D-Ac106 prompted significantly higher accumulation of biomass in roots as opposed to NBPT-treated or control plants. This is due to the ability of both D-106 and D-Ac106 to stimulate root elongation and the formation of lateral roots, plant traits that are desirable features for plants exploiting soil resources such as water and mineral nutrients. The biostimulant properties demonstrated by D-106 and D-Ac106 not only increase the efficacy of these urease inhibitors but also bolster millet growth, rendering them suitable candidates for integration into urea-based fertilizers to optimize efficiency.

Termos para indexação: nitrogen fertilizer, biostimulants, millet, urea.