Fluid-structure interaction in problems of patient specific transcatheter aortic valve implantation with and without paravalvular leakage complication

ABSTRACT

In agricultural production, nitrogen loss leads to economic loss and is a high environmental risk affecting plant growth, yield, and quality. Use of the N fertilizer with a urease inhibitor is thus necessary to minimize N losses and increase the efficiency of N. This study aimed to evaluate the effects of N-(n-butyl) Thiophosphoric Triamide (NBPT) on the growth, yield, and quality of pineapple. The experiment involved two foliar fertilizer treatments: 1% (w/v) urea solution with NBPT (2.25 mL kg−1 urea) was treated as NLU (NBPT Liquid Urea), and the same concentration of urea without NBPT served as the control. Both were applied 12 times, starting 1 month after planting (MAP) and continuing once a month for 12 months. The application of urea with NBPT notably increased the above-ground dry biomass per plant (20% and 10% at 8 and 12 MAP, respectively), leaf area per plant (23% and 15% at 8 and 12 MAP, respectively), N accumulation per plant (10%), PFPN (Partial Factor Productivity) (13%), and average fruit weight (15%) compared to the treatment with urea alone (control). The analysis of quality parameters indicated that urea with NBPT improves TSS (Total Soluble Solids) (19%), ascorbic acid (10%), and sucrose (14%) but reduces the total organic acid content (21%) in pineapple. When using urea with a urease inhibitor (NBPT), there was a significant improvement in growth, yield, quality, and nitrogen use efficiency, with the additional benefit of reduced nitrogen losses, in combination with easy handling. Hence, urea with a urease inhibitor can be used as a viable alternative for increasing pineapple yield by boosting growth with better fruit quality.

Keyword: Pineapple; N-(n-butyl) thiophosphoric triamide; Growth; Yield; Quality; Nitrogen use efficiency