

# GREENER ALFALFA FIELDS: UNLOCKING DRY MATTER POTENTIAL WITH BIOSTIMULANTS AND FOLIAR NUTRITION

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*Medicago sativa* is known as the backbone of global forage systems, and its production must evolve to thrive in a future marked by limited resources and environmental stress. A study conducted at the University of Debrecen aimed at exploring how cutting-edge biostimulant technologies, solely and combined with foliar nutrition, can transform alfalfa production, unlocking its full potential for greener, more resilient fields. The experiment was arranged in a randomised complete blocked design with four treatment levels consisting of (i) Biostimulant containing MTU<sup>®</sup>, pidolic acid, and Si, (ii) Tricho Immun + Ino Green (foliar fertilizer), (iii) Tricho Immun, and (iv) control repeated three times. Data collected, including gas exchange parameters, dry matter content, yield, and yield components, were then subjected to analysis of variance using Genstat edition 18, where significant means were separated at a 5% probability level using the least significant difference. Our findings show that the treatments applied significantly impacted gas exchange parameters, dry matter content, yield, and yield components. The combined application of Tricho immun plus Ino green showed the most promising results by increasing transpiration rate by 51.4%, stomatal conductance by 53.9%, and total biomass yield by 21.1%, while Tricho immun also increased intercellular CO<sub>2</sub> by 10.4% over the control. Our findings depict that the integration of biostimulants and foliar nutrients in alfalfa production demonstrates significant improvements in total biomass yield, dry matter yield, and photosynthetic efficiency. This suggests that biostimulants, along with foliar nutrition, can play a significant role in optimizing crop performance under diverse growing conditions.