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Impact of exogenous proline or tyrosine on growth, some biochemical aspects and yield components of quinoa plant grown in sandy soil

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Abstract: A field experiment was conducted to evaluate the potential of foliar treatment of tyrosine or proline (50, 75 & 100 mg/l) on growth characters, photosynthetic pigments, seed yield quantity and quality and some biochemical aspects of quinoa plant under grown in sandy soil. Exogenous application of tyrosine or proline led to marked increases in growth characters (plant height, shoot, root fresh and dry weight) concomitantly with an increase in the levels of IAA, photosynthetic pigments (chlorophyll a, chlorophyll b, and carotenoids), phenol, free amino acid contents, carbohydrates content and yield components, as compared with the control. It could be concluded that foliar spray of tyrosine or proline was effective in improving quinoa performance by enhancing antioxidant compounds (phenolics), compatible osmolytes and antioxidant enzymes. All treatments increased seed yield and its components, also a marked increase in nutritional values of the yielded seed (carbohydrate %, protein%, flavonoids and antioxidant activity). It is noticed that tyrosine followed proline at 100 mg/l are more pronounced in increasing most of the tested parameters of quinoa plant.
Key words: Antioxidant enzymes, Phenol, Proline, Quinoa, Tyrosine.
