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## **Effect of foliar applied paclobutrazol on yield and seed quality of quinoa**

**Abdullah**

Al Hala Pest Control, Dubai

Future smart food crops are potential options to tackle climate adversities and increasing malnutrition especially in developing countries. Some of the potential crops have been selected as future smart food (FSF) by FAO. Quinoa (*Chenopodium quinoa*) is listed among these due to climate resilience and unique functional food properties. Quinoa has been successfully introduced in Pakistan since 2009, but grain yield and seed quality are not up to its potential. Yield of quinoa is low in Pakistan as compared to the average yield of its native countries due to excessive vegetative growth in response to high nitrogen application. To overcome this problem, a field study was conducted to evaluate the effect of foliar applied paclobutrazol (Vegetative growth retardant) on quinoa under different nitrogen regimes. Experiment was conducted at Research Farm, MNS-University of agriculture, Multan. There were 4 replications in Randomized Complete Block Design (RCBD) with split plot arrangement. Different doses of nitrogen (N1= 75 kg ha<sup>-1</sup> and N2= 100 kg ha<sup>-1</sup>) were laid out in main plots. Sub plots treatments were control (water spray) and foliar application of paclobutrazol at the rate of 1.7, 3.4 and 5.1mM. Collected data on growth, physiological, yield and seed quality parameters were statistically analyzed by Fisher's ANOVA techniques at 5% probability level. Differences between treatments means was

compared via Tukey's test using computer-based software statistics 10. Results revealed that foliar spray of paclobutrazol @3.4 mM under higher nitrogen dose (100 kg ha<sup>-1</sup>) significantly improved quinoa growth. Vegetative growth was increased by increasing nitrogen dose while decreased by foliar spray of paclobutrazol. Physiological attributes such as chlorophyll content index, Photosynthetic rate, water use efficiency also improved by foliar spray of paclobutrazol under high nitrogen regimes. As results of improved growth and physiological attributes, grain yield, harvest index, seed germination %, vigour and germination index was also increased. In conclusion, foliar spray of paclobutrazol @3.4 mM is an effective and economical approach to increase the harvest index and seed quality by suppressing vegetative growth of quinoa under increased nitrogen application..

### **Biography**

Abdullah has completed his MSc (Hons.) Agronomy at the age of 26 from Muhammad Nawaz Shareef University of Agriculture, Multan, Pakistan. He is working as Agriculture Engineer at Al Hala Public Health Control Est. Dubai. His publication is under process in Journal of Plant Growth Regulation (JPGR).

**abdullahmalik701@gmail.com**

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