

Comparison between rainfed in Daireaux and drip irrigation in Beltrán did not show significant differences. During post-harvest process, more than 40% volume was lost. Desaponification process resulted excellent, although black seeds were still present, as optical sensor is not available. Seeds are even smaller than the original Danish seeds. Argentine markets commercialize mostly Bolivian Real varieties, and local quinoa knowledge is still very poor. Alternative value added business plans are being studied.

Keywords: large scale, irrigation, diameter, market demand

Preliminary results on quinoa (*Chenopodium quinoa* Willd.) cultivated in Tunisian Semi-Arid area under drought and salinity conditions

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Most of arid regions, as Tunisian area, are threatened by environmental changes considering the shortage of water resources and the low quality of water that is used for crop irrigation. To ensure food security under this current context, there is a need to search for new crops with high economic value and adapted to extreme climatic condition like quinoa (*Chenopodium quinoa* Willd). A program was started from 2014 to study the responses of quinoa under Tunisian drought and salinity constraints. A preliminary study was carried out under greenhouse using two experiences. For the first, quinoa plants were irrigated by fresh water (1.25 dS.m⁻¹) with three frequencies: 3, 7 and 12 days. For the second, quinoa plants were irrigated with four quality of saline water: 1.25, 10, 25 and 40 dS.m⁻¹ to analyze the effect of both drought and salinity stress on morphological and physiological parameters of quinoa. In 2015, another study was done in plot where we interested ourselves in the effect of two different irrigation management strategies on the growth and the nutritional value of quinoa seeds. The first group grew under different deficit regimes with 100%, 70% and 50% water requirements. The irrigation water of the second group contained different amounts of salt (Fresh water: 0.9 g.l⁻¹, 6 g.l⁻¹ and 12 g.l⁻¹). In this paper, we focus on the preliminary result of salinity stress of the second part where we found out that the irrigation with 6 g.l⁻¹ of salt content increased seeds yield weight from 8.43 g per plant to 20.57 g per plant, the 1000 seeds weight from 1.85g to 2.34 g compared to the control. The mineral composition of the plant irrigated with saline water showed an increase in Na⁺ content in seeds but also an important variation of the majority of macroelements (P, K⁺, Ca²⁺, Mg²⁺).

Keywords: Quinoa seeds, water deficit, salinity, morphological, physiological, mineral composition, Tunisia.