Influence of nitrogen on growth and development processes of *Chenopodium quinoa* Willd. under controlled (hydroponic) conditions

Status
Completed

Duration
03.2018-01.2020

Description
Quinoa (*Chenopodium quinoa* Willd.), is an annual, dicotyledonous, herbaceous crop belonging to the *Amaranthaceae* family. The origin of quinoa is in the Andean region of South America. During the second half of the 20th century the Western world's interest in this species, which had been neglected for centuries, began to grow. Certainly, one explanation for the rapid rise of this useful crop is the exceptional nutritional value of its grains. Quinoa grains not only contain a high proportion of proteins, but also a favorable composition of essential amino acids, and consequently a high protein quality. The crop is also known for its low environmental requirements. Even very low nutrient supplies at marginal locations allow for cultivation. However, in order to achieve higher yields, fertilization is also indispensable for quinoa. Above all, nitrogen (N), as one of the most important plant nutrients, has great effects on crop growth. Also the earlier absorption of larger proportions of photosynthetically active radiation, as well as effects on storage organs in the later course of development, can be attributed to the effect of increased nitrogen supply. Particularly for varieties adapted to European conditions, there are only a few studies regarding the influence of N fertilization on the growth and development and finally on yield formation of quinoa.

Considering this background, the aim of this study was to record the dependence of different N supply regarding phenology, important morphological and yield-forming parameters of a quinoa genotype (cv. Zeno) adapted to European conditions. Effects on plant growth and development caused by different nutrient supply could be determined in a hydroponic experiment without major disturbing factors.

Involved persons
Student: Felix Bächlin

First examiner: Prof. Dr. agr. Simone Graeff-Hönninger

Second examiner: Prof. Dr. Sandra Schmöckel

Supervision: Prof. Dr. agr. Simone Graeff-Hönninger, M.Sc. Achim Präger