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Master of Science (M. Sc) in Agroecology

Title

**Effects of super absorbent polymer and
manure on quantitative and qualitative
characteristics of *Nigella sativa* L. under
drought stress**

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Abstract

Effects of super absorbent polymer and manure on quantitative and qualitative characteristics of Black cumin (*Nigella sativa* L) under drought stress, a split plot randomized complete block design with three replications was conducted in Research Station Agriculture, University of Zabol. The experimental treatments was included drought stress (mild drought stress, moderate drought stress and Severe drought stress) intervals comprising the main treatments and fertilizer treatment included control, manure(20 T ha⁻¹), super absorbent polymer (200 kg ha⁻¹),combined application super absorbent polymer and manure were sub-plots. In this study some morphological traits (plant height grain yield, Harvest index, Biomass yield) Physiological traits (Chlorophyll a, b and T. chlorophyll, Cartenoied) and activities of antioxidant enzymes Catalase, Ascorbate peroxidase and poli-phenol oxidase) was estimated. The results showed that increased levels of drought stress, cause decreased plant height, Photosynthetic pigments and the activity of antioxidant enzymes, the amount of Cartenoied, the amount and yield of essential oil increased. However tha application of super absorbent polymer and manure at each level of drought stress, changed the amount of Physiological, morphological and agronomic traits in Black cumin, So that with combined application super absorbent polymer and manure, the amount of Chlorophyll a, b and T. chlorophyll, Cartenoied, amount and yield of essential oil, plant height, grain yield, Harvest index and Biomass yield and decreased antioxidant defense system. According to the results, combined application super absorbent polymer and manure under drought stress can have a positive effect on the traits studied.

Keywords: Drought stress, Essentialoil, Antionidant, Enzymes, *Nigella sativa*, Super absurbant