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Dissertation

Title	<i>COMPARATIVE STUDY OF NUTRIENT UPTAKE BETWEEN SORGHUM X DRUMMONDII AND CYPERUS CONGLOMERATUS, A DESERT SEDGE NATIVE TO THE UAE</i>
Faculty Advisor	Dr. Elke Gabriel Neumann
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Abstract	Sudan grass (<i>Sorghum x drummondii</i>) is commonly grown for the production of animal fodder in the UAE. Thenda (<i>Cyperus conglomeratus</i>) is a sedge native to the UAE, and one of very few plant species that colonize soils of shifting desert dunes. As for the grand majority of other land plants, the roots of Sudan grass associate with symbiotic soil fungi to form endomycorrhizas. These facilitate the uptake of phosphate and other nutritional elements from the soil. Thenda is a non-host to these root symbionts. In the desert sedges, rhizosheaths comprising of dense coats of root hairs and entangled soil particles may constitute an alternative strategy to increase plant nutrient availability. The main goal of the present study was to find out which of these two different plant species would be more successful in nutrient uptake from agricultural soils of the UAE. Under field and greenhouse conditions, Thenda took up larger amounts of phosphate and micronutrients compared with Sudan grass. When the plants were grown with roots partially sharing the same soil volume, there was no evidence for competitive interactions in terms of nutrient acquisition. Possibly this was because Thenda and Sudan grass exploited different pools of nutritional elements. Under field conditions, Thenda produced greater aboveground biomass compared with Sudan grass. This suggests that Thenda has a great potential to serve in animal fodder production or landscaping in arid lands.