



Impact of Seeding Depth on Initial Growth and Germination Rate of Hemp

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Seeding depth is one of the most critical agronomic factors influencing seedling emergence and early plant development, directly affecting crop establishment. In industrial hemp (*Cannabis sativa* L.), a crop of growing interest for fiber, oil, and seed production, the correct positioning of seeds in the soil determines emergence rate, seedling vigor, and ultimately yield. Shallow sowing depths (≤ 1 cm) may increase the risk of seed desiccation and reduce uniform emergence, whereas deeper placements (≥ 5 cm) can hinder emergence due to excessive reserve depletion during hypocotyl elongation, resulting in weaker seedlings [1]. To evaluate the effect of sowing depth on hemp establishment, an experiment was conducted using four trays (15 cm deep, 40 cells each). Four sowing depths (1, 3, 5, and 7 cm) were tested with four replicates per treatment. Each replicate consisted of 10 cells, with five seeds sown per cell. The substrate used consisted of 40–50% moisture, 40–50% organic matter, 1–1.3% nitrogen, 0.7–1% phosphorus, 0.8–1.1% potassium, 0.6–0.8% calcium, 0.1–0.2% magnesium, and a pH of 5.5–6.5. Trays were maintained at 25 °C under natural light, with irrigation every 2–3 days. The 3 cm sowing depth produced the highest germination rate and the tallest seedlings compared with the other treatments. These findings confirm that sowing depth significantly influences hemp emergence and early growth, with 3 cm emerging as the most suitable depth under the tested conditions. This practice may represent a simple and effective strategy to improve crop establishment. Nevertheless, soil texture, compaction, water availability, and temperature can alter the optimal depth, and further trials under field conditions are recommended to validate these results across different environments and cultivars.

Biography

Andreia Saragoça has completed his BsC at the age of 33 years from University of Extremadura, Badajoz, Spain, and currently in the final year of the Master's in Sustainable Agriculture, Polytechnic Institute of Portalegre, Portalegre, Portugal. She is a research fellow in the BGREENER project, which studies industrial hemp as a promoter of biodiversity. She has published 2 in the field of agronomy. Ana Isabel Cordeiro, 51 years old, holds a PhD in Biology and Plant Production from the University of Extremadura, Spain. She is an Associate Professor at the Polytechnic Institute of Portalegre (IPP), Portugal, and the Lead Researcher at IPP for the BGREENER project, which studies industrial hemp as a promoter of biodiversity. She has published two scientific articles in the last two years.

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