

AGROBIOLOGICAL STUDY OF LETTUCE HYBRIDS (*LACTUCA SATIVA* L.) IN HYDROPONIC CULTURE

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In the context of the modernization of agricultural technologies, in addition to conventional vegetable growing systems, there is an increasing orientation towards alternative production methods, soilless cultivation systems - hydroponics.

The aim of this research was to evaluate the agrobiological performance of several lettuce hybrids grown in a hydroponic system Nutrient Film Technique (NFT). The study included six lettuce hybrids known for their high potential in hydroponic cultivation, all from the Rijk Zwaan breeding portfolio.

Barlach is a red-leaf *Butterhead* type, Sungari is a red-leaf *Crystal* type, Dunand is a dark green *Crystal* type, Rictus is a dark green *Romaine* type, and Exact is a *Frisée* type with deeply incised and curled light green leaves.

The research was conducted in the hydroponic greenhouse of the GreenBioHub complex, within the experimental sector of the Faculty of Agricultural, Forestry and Environmental Sciences. The NFT system used was a recirculating Nutrient Film Technique setup, which includes slightly inclined gullies through which a thin film of nutrient solution continuously flows. For seedling production, lettuce seeds were sown in mineral wool cubes under optimal germination and early growth conditions. After 12 days from sowing, the seedlings had developed three well-formed true leaves and exhibited a robust root system, with roots approximately 3 cm in length visibly emerging from the mineral wool cubes. Transplanting into the NFT system was carried out on March 16, 2024. Plants were harvested manually on April 4, 2024, at the stage of optimal rosette development. The optimal harvest time was determined based on morpho-phenological criteria such as the number of fully developed rosette leaves and the slight overlap of leaves between adjacent plants on the gully. Plants were completely extracted from the system with the root systems preserved intact for further evaluation. Among the studied hybrids, Rictus stood out for its rapid leaf production and leaf size, positioning it as a promising candidate for intensive production. Barlach recorded the highest number of leaves (24), although these were smaller in size. Sungari, Dunand, and Exact demonstrated a balanced ratio between leaf number and size, indicating valuable agronomic potential. The leaf surface area (cm²/plant) ranged from 71.6 cm² in hybrid Bobal to 124.5 cm² in Sungari, the latter showing the most vigorous vegetative development and highest photosynthetic potential. Rictus (111.9 cm²) and Dunand (101.4 cm²) also registered high values, reflecting balanced growth and efficient rosette formation.

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