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FEDER UNION EUROPEENNE

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LE FONDS EUROPÉEN DE DÉVELOPPEMENT RÉGIONAL ET LA WALLONIE INVESTISSENT DANS VOTRE AVENIR

LIÈGE université Gembloux Agro-Bio Tech

Assessing the Operational Costs and Quality of Hemp Flower Production

Françoise Bafort, Arthur Libault, Haïssam Jijakli - Integrated and Urban Plant Pathology Laboratory, University of Liège, Belgium
Etienne Maron, Stephan Kohnen, Biomass Valorisation Platform, Celabor scrl, Belgium

HEMP FLOWERS: A RENEWED OPPORTUNITY

Cannabis sativa L., long cultivated for fiber and seeds, is now gaining attention for its flowers rich in CBD and CBG. With recent EU regulatory changes, legal production for health, cosmetic, and food uses is now possible.

This study compares two cultivation systems— open-field vs. greenhouse—using two varieties. We assess:

- Plant growth
- Flower yield
- Cannabinoid content
- Production costs

Goal: Identify efficient, legal, and market-adapted practices for quality flower production.

METHOD

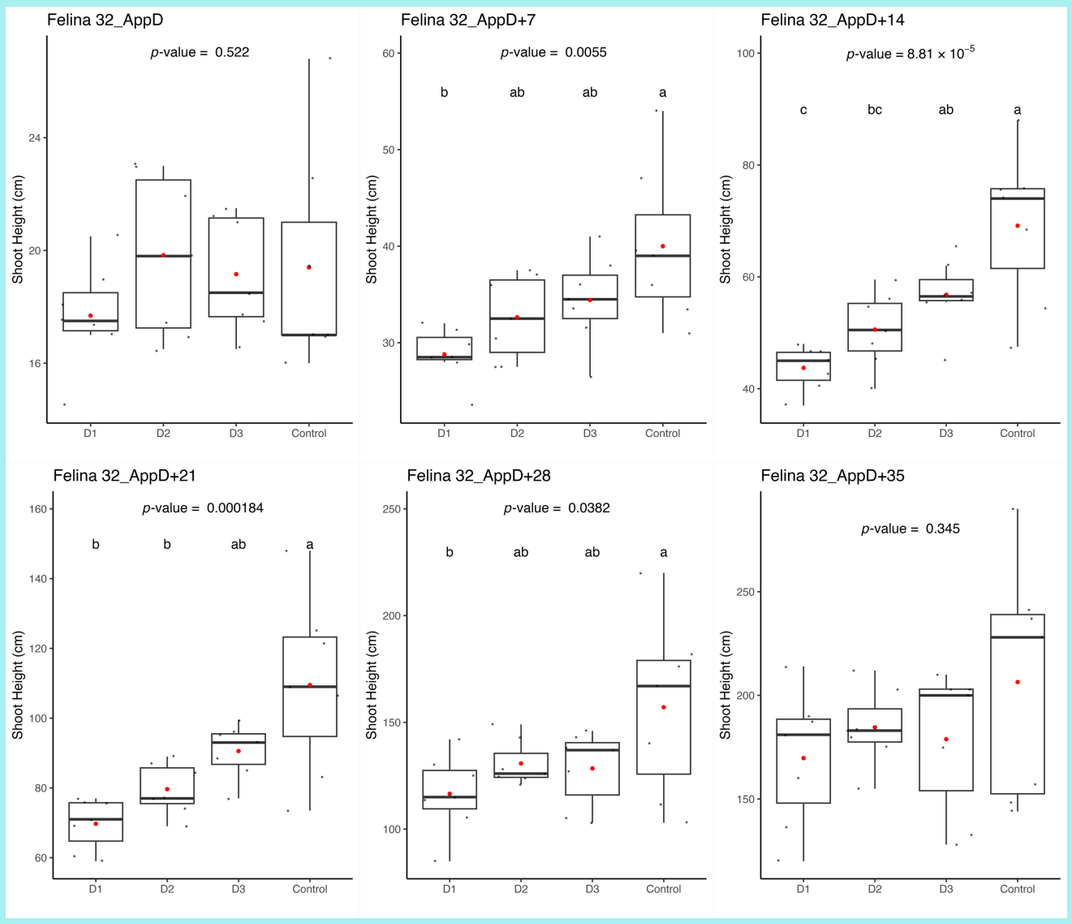
Two hemp varieties (Félina 32, Santhica 27):

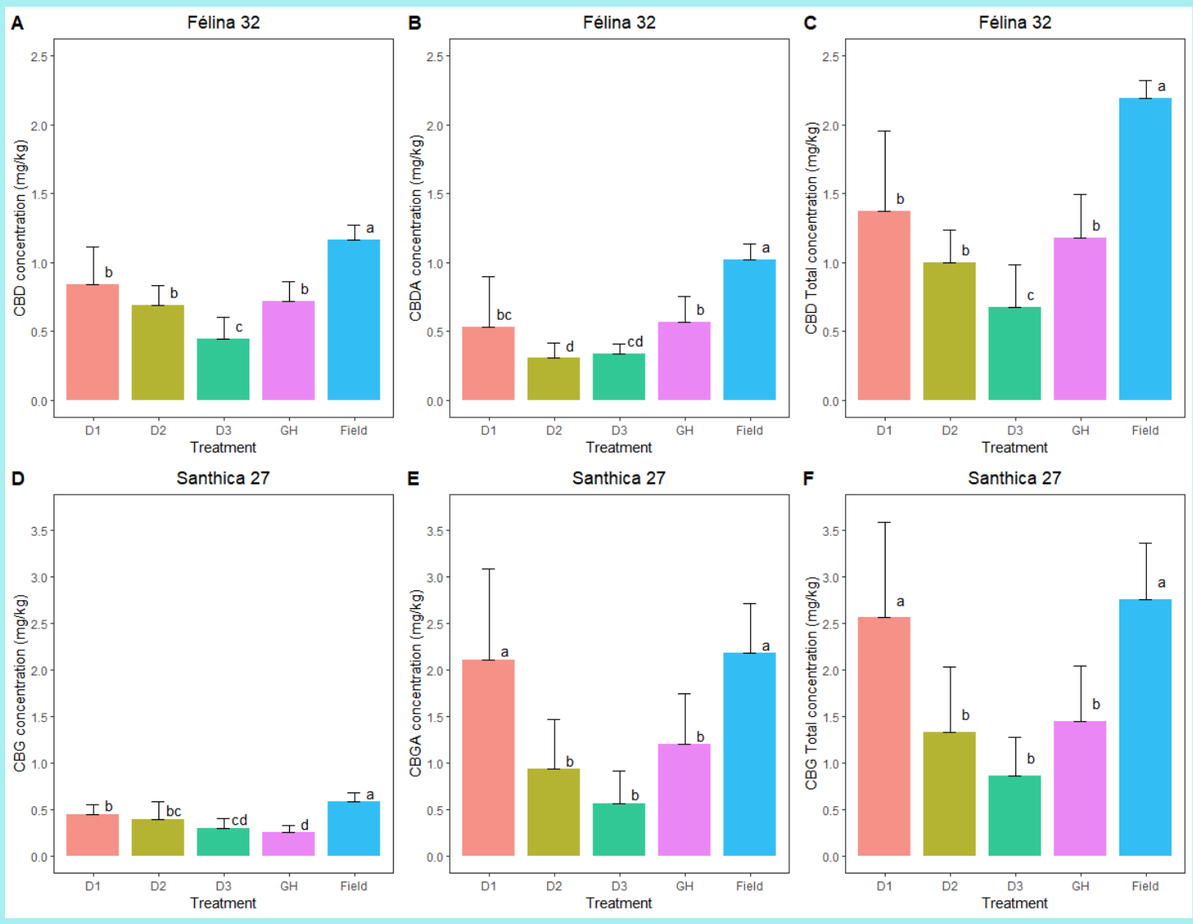
- Field (n=24): 40 kg/ha sowing, 100 kg/ha N
- Greenhouse (n=56): NFT system + 4 ethylene doses (0–30 µL L^{-1})

Parameters followed:

- Growth: weekly (GH) / harvest (field)
- Cannabinoids: UPLC-MS (ethanol extract)
- CO_2 extraction on flowers
- Economic analysis: inputs & labor

RESULTS





CONCLUSIONS

- Ethephon affects growth for 4–5 weeks, with peak impact in the first 2 weeks.
- Field plants: lower biomass, but larger stems than greenhouse.
- Field plants showed higher CBD in Félina 32 and similar CBG in Santhica 27 — despite lower biomass.
- Hydroponics: much higher potential CBD/CBG yield with multiple cycles & high ethephon doses.
- Greenhouse costs: 15–18× higher than field due to energy, labor & inputs.
- Improvements (lighting, automation, optimization) could cut costs & boost viability.

Ref.: Bafort, F.; Libault, A.; Maron, E.; Kohnen, S.; Ancion, N.; Jijakli, M.H. Operational Costs and Analysis of Agronomic Characteristics on Cannabidiol and Cannabigerol Hemp (Cannabis sativa L.) in Hydroponic Soilless Greenhouse and Field Cultivation. Horticulturae 2024, 10, 1271. https://doi.org/10.3390/horticulturae10121271.