

CREATING INNOVATIVE ORGANIC BIODEGRADABLE SUBSTRATES FOR SEED GERMINATION

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In alternative farming, it is important to use only special pur-*pose* growing substrates, which used to consist largely of peat. The EU is working to reduce the use of peat, as peat-lands are essential for CO₂ capture and climate change miti-*gation*. 2020 European Green Deal aims promote a shift to-wards more sustainable alternative's biodegradable substrates and other sustainable products. As biogas production gener-*ates* large quantities of digestate (one biogas plant produces 10,000 m³/year of digestate, which has a chemical substrate that provides nutrients needed by plants), research has been carried out on how to use it in growing substrates instead of peat. Two digestates from Lithuanian companies (UAB "Tvari Energija" and UAB "Kurana"), also soil, peat, sapro-*pel*, and coffee grounds, were used to create the substrates with essential plant nutrients. Different ratios of raw materi-*als* were selected for the development of innova-*tive* sub-*strates*. These digestates contain not only primary and sec-*ondary* nutrients (N, P, K, Ca, Mg) also an organic carbon and organic matter. The germination of cucumber and tomato seeds improved in both speed and success when grown in a substrate containing UAB "Tvari Energija" digestate (40–60%), soil (20–30%), peat (10–20%), sapropel (5%), and coffee grounds (5%). The plants also exhibited greater growth over 30 days of cultivation compared to those grown with digestate substrates from UAB "Kurana". It is assumed that this digestate has a higher total nitrogen concentration, which burned the plants upon emergence. Consequently, a lower amount (20–30%) of UAB "Kurana" digestate was se-*lected*. This study confirms that digestate can be effectively used in seed germination substrates, thus recycling biogas production waste by reducing its disposal to landfills and conserving natural resources.

Keywords: Digestate, Substrates, Seed, Nutrients.