

SusOrgPlus final project summary



Project purpose

SusOrgPlus aims to improve the sustainability of organic food processing and the nutritional value of processed organic produce.

SusOrgPlus will develop smart food drying devices, renewable energy drying solutions, value added, natural food additives and supporting material for a related code of practice leading to high quality products with low environmental impact. The project will result in technical solutions and value added products.

Final project summary

SusOrgPlus has developed novel, affordable smart processing systems with dynamic control (e.g. temperature, humidity,) for the production of high quality ingredients and highly nutritious dried (and further processed) products. The results obtained show a high potential for non-invasive product monitoring of moisture content, colour and valuable compounds during drying processes and to further improve the developed product related, individual drying strategies. Additionally, alternative control point driven strategies were investigated which were intermittent, product and step wise drying and were compared to air temperature controlled drying utilizing simple and cost-effective sensors and microcontrollers. The results show the high potential to increase product quality as well as process efficiency of drying processes.

The development and modelling of the CO₂ neutral heat pump batch dryer shows a high potential to phase out fossil fuels to enable future processing chains with low environmental impacts will increase the sustainability of organic produce.

Further, methods (drying/milling, extraction/microencapsulation) for plant based and rich in secondary plant compounds (antioxidants, lycopene etc.) powder and extract development were evaluated regarding product quality. They were further utilized to enrich organic foods (colorants, flavorings and nutritional fortification) and develop innovative foods like bakery products or pasta or dried fruits and vegetable. This will help the organic sector to increase the

competitiveness and the potential to phase out contentious artificial substances, i.e. colourants and other ingredients, due to improved processing strategies and plant-based substitutes. Additionally, it will help to reduce direct waste of food and utilise and upgrade products that are rejected from the market or help to utilise by-products (e.g. tomato juice production) or underutilized species (e.g. nettle).

The developed products have been assessed by chemical and sensory analyses and products and drying systems have been evaluated on their environmental and economic impact (LCA/LCCA) to show clearly the advantages of new drying systems and new products.

Results obtained will feed in the Code of Practice (CoP) to be available to processors. The results have also been presented at national and international workshops, fairs, seminars/webinars and in scientific and stakeholder related articles. The involvement of students supported the training of high qualified employees sensitised for the needs of the sector to improve the sustainability of future food processing.



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