Sunniva

We aim at the development of a sustainable food system from production to consumption, addressing the entire food supply chain for the vegetables tomato and Brassica and their derived products. The project will increase consumers' access to safe, healthy and convenient food through novel processing techniques and improve utilization of raw material, by-products and waste, for which valorization strategies will be developed.
Brassica and tomatoes represent a major part of the human diet. They are consumed world-wide and renowned for their health beneficial effects. In Europe, tomatoes and Brassica are among the most important vegetables cultivated; the areas for Brassica and tomato production cover 400 000 and 250 000 hectares, respectively, yielding 6 and 15 million tons/year. Preservation of health-beneficial phytochemicals (HBPC) is central in the vegetable processing part of the project. Process optimization by modeling will contribute to preserve HBPC and thus food quality. Tomato and Brassica have a high intrinsic health-promoting value and technologies will be developed to preserve the high HBPC level in the derived food products while also developing novel products with beneficial nutritional and sensory attributes. Optimal harvest time and post-harvest elicitor treatments will further increase HBPC in the raw material. The global volume of vegetable food wastage, not including agricultural waste, is estimated to 400 million tons/year. Valorization of unused biomass after processing thus enhances food production sustainability and contributes to a lower ecological impact. We will reduce waste in the food supply chain using two strategies. First, processing and stabilization for recycling into the food chain will be investigated through the use of the novel technologies spiral press filtering and refractance window drying. Second, the value of unused vegetable biomass as component in the production of organic fertilizer will be evaluated. The novel food processing technologies micro wave heating and agitated retorting will be utilized to demonstrate the potential for combining savings in energy and water consumption. The project aims for 25% savings in energy expenses, and 40-60% reduction in water consumption, compared to conventional processing.