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Fish and fish waste-based fertilizers in organic farming – With status in Norway: A review

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ABSTRACT

This paper reviews relevant knowledge about the production and uses of fertilizers from fish and fish waste (FW) that may be applicable for certified organic farming, with a focus on crop and horticultural plants. Fish industries generate a substantial amount of FW. Depending on the level of processing or type of fish, 30–70% of the original fish is FW. Circular economy and organic farming concepts were used to evaluate the potential of production of fertilizers from captured fish. Fertilizers produced from captured fish promote the recycling of nutrients from the sea and back to terrestrial environments. Nutritional composition of FW is assessed to determine the potential to supply plant nutrients such as nitrogen, or a combination of nitrogen and phosphorous, or to enrich a compost. Methods used in processing of FW to produce fish-emulsion, fish hydrolysate/fish silage, fish-compost and digestate from anaerobic digestion/co-digestion are presented. Using information about commercially available fish-based fertilizers listed by the Organic Materials Review Institute (OMRI), we present a scenario for establishing fish/FW-based fertilizers industry and research in Europe. With Norway's 9th position among top ten global capture producers and focus in Norway on developing organic farming, we brief how FW is currently utilized and regulated, and discuss its availability for possible production of FW-based organic fertilizers. The amount of FW available in Norway for production of fertilizers may facilitate the establishment of an industrial product that can replace the currently common use of dried poultry manure from conventional farming in organic farming.

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