



Activity no EFH-IL-2: Support on olive oil mills waste Regulation and methods

(continued previous activity under H2020 CB/MEP program)

“Recommendations for a national model for management of waste from olive oil mills, potential areas of improvement in Israel”

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THE SWIM AND H2020 SUPPORT MECHANISM PROJECT (2016-2019)

The SWIM-H2020 SM is a Regional Technical Support Program that includes the following Partner Countries (PCs): Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, [Syria] and Tunisia. However, in order to ensure the coherence and effectiveness of Union financing or to foster regional co-operation, eligibility of specific actions will be extended to the Western Balkan countries (Albania, Bosnia Herzegovina and Montenegro), Turkey and Mauritania. The Program is funded by the European Neighborhood Instrument (ENI) South/Environment. It ensures the continuation of EU's regional support to ENP South countries in the fields of water management, marine pollution prevention and adds value to other important EU-funded regional programs in related fields, in particular the SWITCH-Med program, and the Clima South program, as well as to projects under the EU bilateral programming, where environment and water are identified as priority sectors for the EU co-operation. It complements and provides operational partnerships and links with the projects labelled by the Union for the Mediterranean, project preparation facilities in particular MESHIP phase II and with the next phase of the ENPI-SEIS project on environmental information systems, whereas its work plan will be coherent with, and supportive of, the Barcelona Convention and its Mediterranean Action Plan.

The overall objective of the Program is to contribute to reduced marine pollution and a more sustainable use of scarce water resources. The Technical Assistance services are grouped in 6 work packages: WP1. Expert facility, WP2. Peer-to-peer experience sharing and dialogue, WP3. Training activities, WP4. Communication and visibility, WP5. Capitalizing the lessons learnt, good practices and success stories and WP6. Support activities.



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RECOMMENDATIONS FOR A NATIONAL MODEL FOR MANAGEMENT OF WASTE FROM OLIVE OIL MILLS, POTENTIAL AREAS OF IMPROVEMENT IN ISRAEL

The following recommendations are based on the observations and outcomes of Task 1 of the SWIM-H2020 SM Expert Facility activity EFH-IL-2: Support on olive oil mills waste regulation and methods that was a mission to Israel for an on-site tour of various Olive Mills in the country (see Mission Report).

The different Olive Mill Waste (OMW) management practices applied in Israel during the last 20 years are:

- Land spreading of OMW on 'open fields' or agricultural roads,
- Evaporation ponds,
- DAF systems on Cabri & ziv aquifer Oms to achieve at least 70% reduction of pollution load,
- Integrated management for energy production.

Despite the above efforts, still illegal discharge in sewage networks is taking place for considerable amounts of OMW.

Since, no cost' management is not environmentally acceptable, the olive mill owners should be warned for the consequences of unsustainable practices and systematically informed for the different available technologies included in /compatible with the legislation.

Taking into account the existing situation, as it appeared during the visits in different olive mills, the possible OMW management technologies that can be applied under current conditions, are:

- a) Controlled land application of OMW (to open fields and olive orchards), as this is the most cost-effective environmentally acceptable management. For orchard application a soil analysis is necessary for determining the amount of OMW to be applied each time, under the certain soil and climate conditions.



Constraints: Sloping and hilly orchards (it is difficult to apply), farmer's mentality and acceptance (need for continuous information about the benefits), cost for OMW application. Sharing the cost between public entities – Environmental Agency, Municipality - and OM owners (25-25-50%) is proposed.

b) Composting olive by-products (pomace, leaves and OMW). It is suitable for small and medium-size olive extraction plants producing high quality organic compost to be used as soil amendment. It is a simple and rather inexpensive procedure. It allows complete control of pollution and strengthens the circular economy.

Constraints: In need of appropriate space/area, available beside the olive extraction plant (not suitable for those existing inside towns). It also requires olive mill owners/staff involvement (training, subsidizing and observance of regulations)

c) The Mobile Integrated Sustainable System for OMW treatment serving the mills at their location, after some improvements (reduction of retention time, etc.) can be an alternative.

Constraints: The high cost for the treatment.

d) Evaporation ponds located far from villages/ settlements for OMW disposal after fat separation at olive mill, can be an alternative for a number of small, scattered, olive mills unpleasant odors and insects in the vicinity.

Constraints: unpleasant odors and insects in the vicinity, water-proofing, collection and transportation cost (can be subsidised)

e) Electro-coagulation, Hydrolysis–Oxidation, Anaerobic digestion and other more sophisticated treatment methods cannot be easily applied in Israel due to small size of olive extraction plants and small amount of OMW produced.

Constraints: The high cost of installations, and operation costs; the needs for staff with relevant expertise.

f) The establishment of a modern technology pomace processing plant in Israel could offer a viable solution, since it could accept most of the pomace produced in various plants for further processing, reducing environmental impacts and producing new marketable products, like refined oil, pellets, etc.



For medium to long-term solutions, a combined sequential and parallel development of the following recommendations should be considered:

- a) Due to short time of operation of olive mills in Israel and the small quantity of OMWs produced, the OMWs could be integrated with other agriculture wastes produced during the year.
- b) The sustainable environmental and cost-effective treatment for all the organic agricultural wastes, including OMW, should be based on energy production through centralized or decentralized centers and by giving back nutrients to the land - Bio-gas equivalent processes.
- c) The number of the olive oil mills operating in the country should be reduced in order to enhance the affordability for installing appropriate infrastructure to increase safety and upgrade quality standards, as well as reducing the cost of managing their by-products.
- d) In pursuing the above re-location of olive mills out of the towns or villages is advisable together with shifting from 3phase to 2phase decanters.
- e) A systematic information campaign for proper olive mill operation and by-product valorization must be initiated.