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OLIVE OIL IN WEST BANK

INTRODUCTION

Olive trees are one of the most suitable trees for the Palestine soil and climate. This tree, characterized its ability to withstand the hot and dry climate, develops very well in the sandy and clay soil. Olive trees are in need to special climate warm in summer nearly 25° c for continuing ripening of olive and oil forming, and can withstand high temperature till 53 c in addition to climatic situation and cold in winter, also can withstand the low temperature for about -7°C for one day or two till -2°C to -3°C for longer period for the budding process. Olive trees can produce a good crop for hundreds of years. Olive production has been reduced by the Israeli policy of land confiscation and destruction of trees, as over 185,00 trees have been uprooted in the West Bank and many areas that were once cultivated with olives have been confiscated for Israeli use. Also, the absence of the local authorities increase the abuse of the agricultural land, for example, people use the land to have the construction material in, goats are eating the olive branching etc.

Olive production is an important parameter in the economy and lifestyle of the people. Ninety percent of the olives produced in the West Bank are processed in the 281 olive mills to make oil. These mills, most of which are semi-automatic or the "old-fashioned" kind, are located as follows: 35.6% of mills are located in Tulkarm, 23.1% are in Ramallah, 18.5% are in Jenin, 17.4% are in Nablus, 4.6% are in Hebron, 0.8% are in Bethlehem.

WASTE

The milling process uses water for washing before starting the crushing. Each ton of olives requires nearly 1.5 CM of water for washing. The wastewater contains fine dust particles which were on the olives, fatty acids, grease, glycerol, and oil. The liquid waste, which exceeds the solid by 3:1, is a dark viscous, and equals almost 1.5 CM/Ton raw olive. This large amount (approximately 100,000 CM in 1994) is an extremely concentrated effluent (42,000 mg/l BOD & 65,000 mg/l TSS)⁽⁸⁾ and is potentially harmful to the environment. The liquid waste is drained untreated into the sewage network, or in open areas without any consideration to its environmental impact on the groundwater, surface water, or land.



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In addition to liquid wastes, solid waste, in the form of compressed pulp, called olive cake, is generated. This material is either discarded on neighboring lands, dumped at the dumpsite or used as a fuel.

The tables below shows the relation between raw olive and its waste

District	* Olive pressed \ton	Amount of liquid waste CM/Ton
Hebron	13900	20850
Bethlehem	1000	1500
Jenin	29898	44847
Ramallah	9763.5	14645
Tulkarm	20735	31103
Nablus	34616	51924

*Amount of pressed olive is taken from Agriculture database 1994.

YEAR	Quantities of harvested olive to produce olive oil TON	Optimum released amount of Liquid waste CM	Optimum released amount of Solid waste - cake - TON
1988	141400	212100	56560
1989	6750	10125	2700
1990	126000	189000	50400
1991	2280	3420	912
1992	135000	202500	54000
1993	2100	3150	1260

- Liquid waste is a dark viscous substance which is close to 1.5 CM / Ton of raw olives (ARIJ)
- Up to 40 kg of cake is obtained from 100 kg of olives (Olive oil technology)

The fluctuation in the quantities of harvested olive over the years is a natural phenomena, that, in the good seasons, it may be a very toxic to the environment especially to the surface and ground water quality. The organic wastewater with the highest concentration in the West Bank comes from the olive mills or dairy industries. The problem with organic waste is the high BOD and TSS. Since Biochemical Oxygen Demand (BOD) is equal to 80 000 mg/l and Total Suspended Solids (TSS) is equal to 305 000 mg/l ,liquid waste contribute to ground and surface water pollution.



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NOTES ON SOME WB DISTRICTS

In Ramallah district there are nearly 65 olive mills to squeeze olive to produce oil. It is worth mentioning that according to the year 93/94 statistical data, the total amount of olive were 7525 Ton/Y and thus producing 10,100 CM/Y wastewater of the milling process, and olive cake (solid waste) & other solid waste of about 4,700 CM/Y..