FINANCIAL AND ENVIRONMENTAL ANALYSIS OF TYPICAL THREE PHASED OLIVE MILLS IN GREECE

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EXTENDED ABSTRACT

Olive mills in Greece are relatively small sized enterprises usually spatially scattered all over Greece. The present paper aims to calculate the unit capital and operating costs for a typical Greek three-phased olive mill (expressed in €/tn olive fruit) without inclusion of olive mill wastewater (OMW) management. Olive mill capital costs comprise equipment and land acquisition, building construction and acquisition of olive oil storage tanks. Operating costs comprise the transportation of olive fruit from the production areas (olive fields) to the mill – a cost which is usually paid by the owners of private mills -, operating costs (mainly the electrical energy for the operation of milling equipment), labor, water usage and equipment maintenance costs. Capital costs were converted to operating costs (in € / unit time) by accounting for an interest rate and the equipment design lives. Total costs were calculated by simple addition of capital costs to the operating costs for 3 typical olive mill capacities (in tn/hr of olive fruit), namely 1,6 tn/hr, 3,35 tn/hr and 5,6 tn/hr by using reasonable assumptions and by accounting for some "rules of thumb" related to the construction and operation of an olive mill (e.g. it was assumed that 1000 m^2 and 1500 m^2 are required for the installation of 1,6 tn/hr and 5,6 tn/hr facilities, respectively). Total costs are sensitive to the economy of scale and range from €40 / tn to €70 / tn of olive fruit depending on the capacity of each facility. Capital and operating costs range from 36% to 49% and from 51% to 64%, respectively, of the overall cost. Equipment costs are by far the largest capital cost followed by the olive fruit transportation cost. Land acquisition and water usage costs are relatively minor costs. The cost coefficients presented here can be used as decision support tools when comparing small sized decentralized olive mills to larger centralized mills. The potential substitution of the small decentralized units currently encountered in Greece with larger units can be therefore further researched using the results of this study as a basis.
A methodology is also briefly presented here with the goal to calculate environmental indices and rank olive mills according to their relative environmental impacts.

Key words: olive mill, economy of scale, capital cost, operating cost, environmental indices, environmental impact