EFFECT OF CONVERSION TO ORGANIC FARMING ON YIELD, FRUITS AND OIL QUALITY OF OLIVE

By

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M.Sc. Agric. Sc. (Pomology), Cairo University, 2002

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Approval Sheet

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تأثير التحول للزراعة العضوية على المحصول وجودة ثمار وزيت الزيتون

رسالة مقدمة من

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Dedication

To

My Father's Pure Soul,

I dedicate this work.

ABSTRACT

Ahmed Sabry Mofeed: Effect of Conversion to Organic Farming on Yield, Fruits and Oil Quality of Olive. Unpublished Ph.D. Thesis, Department of Horticulture, Faculty of Agriculture, Ain Shams University, 2009.

This work was carried out in (2005-2006) and (2006-2007) seasons on mature Manzanillo olive trees grown in sandy soil, under drip irrigation system, in a private orchard, to investigate the effect of some combinations of organic fertilizers (farmyard manure [FYM] & olive pomace & compost) alone or with bio-fertilizers (vascular arbuscular mycorrhizae[VAM] & mixture of N fixing, P releasing and silicate dissolving bacteria) on vegetative growth, leaf nutrient content, flowering, yield, fruit properties and oil quality. The results indicated that, the highest number of leaves per shoot was observed with (FYM+Pomace+Bio-F.) application, most tested treatments showed no significant effect on number of shoots/twig and leaf area. Application of (FYM+Pomace+Bio-F.) showed the highest leaf N content in both seasons, highest leaf Ca content in the first season and highest leaf K content in the second season. However, (Compost+Bio-F.) gave the highest leaf P content in both seasons. In both seasons applications of (FYM+Pomace+VAM), (FYM+Pomace +Bio-F.) increased leaf Fe, Mn and Cu content, whereas, (Compost +VAM) treatment gave the highest content of Cu in olive leaves in both seasons. Applications of (FYM+Pomace+Bio-F.) and (Compost +Bio-F.) presented the highest leaf chlorophyll (A) content in both seasons and chlorophyll (B) in the second one. Application of (FYM+Pomace+Bio-F.) gave the highest length of inflorescence, flowering density, number of total flowers/inflorescence and perfect flowers% in both seasons. While, the highest sex ratio was obtained from (FYM+Bio-F.). Application of (FYM+pomace+Bio-F.)

presented the highest initial & final fruit set% and yield/tree in both seasons. (FYM+Pomace alone) treatment gave the highest fruit moisture content, while (Compost+Bio-F.) treatment gave the highest fruit oil content in both seasons. Application of (FYM+Pomace+Bio-F.) one of treatments which gave the lowest oil acidity, peroxide value, dien & trien values which means that application presented the highest quality of oil in both seasons. Whereas, the increasing of total polyphenols & tochopherols and bitterness ndicated to high quality oil, and the highest values of these parameters were obtained from (FYM+Pomace+ Bio-F.) and (FYM+Pomace+VAM) applications. On the other hand, the increasing of monounsaturated fatty acid (oleic acid) and the decreasing of polyunsaturated fatty acid (linolenic acid) most important factor that maximizing the oil quality and it was be occurred by the application of (FYM+Pomace+Bio-F.) in both seasons.

Therefore, it could be recommended to use the application of (FYM+Pomace+Bio-F.) to improve vegetative growth, leaf of some mineral content, chlorophyll A & B, flowering, yield and oil quality of Manzanillo olive trees.

Key words: Olive trees, Manzanillo, Organic manures, Bio-fertilizers, VAM, Olive pomace, vegetative growth, flowering, yield, oil quality.

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