

Evaluation of the different techniques to spray the compost tea in organic apple trees field

E. Sehsah¹ and E.B. Belal²

Abstract

The solar development vertical sprayer may be able to operate at low pressure 200 kPa at 0.3 kw for around 50 min (fig.2) and it is producing the lower drift compared to the gun sprayer and two knapsack sprayers (suzuki and Tiazh.Qi).

Keywords: application technique, compost tea, direct injection technique

Introduction

The conventional sprayers, such as the gun sprayers were applied for the apple trees under Egyptian conditions. As well as it need several hand workers to operate and it is more expensive due to the coasts of the workers and fuel cost. In organic apple production the growers tends to apply the compost tea as provide fertilizer. The compost tea is an infusion of compost in water. When compost is soaked in water, beneficial nutrients and microorganisms seep out of the compost into the water. Compost tea does, however, provide fertilizer to both the leaves and roots of fruit trees. The farmer may able to produce the compost tea and it is not expensive under local conditions. Aerated tea devices extend the time of extraction so that a higher quantity and quality of nutrients and microbes can be drawn from the organic feedstock.

- The objectives of this current research were to spray the compost tea by using the vertical boom solar hydraulic sprayer in apple trees. As well as to compare the developed sprayer with gun sprayer and two different motorized backpack sprayers.
- In addition to evaluate the two different aerated compost tea (ACT) as the provide organic fertilizer in apple trees. Utilization the crop residuals and animal wastes to produce the aerated compost tea (ACT). Furthermore, the use of the yeast with the compost tea to improve and increase nutrient availability was investigated.

Material and Methods

The different techniques of application, two different motorized backpack sprayers, an air assisted backpack sprayer suzuki (2.13 kw) and Tiazh.Qinili Machinery Knapsack sprayer (0.7 kW) achieving thorough coverage were compared to the developed vertical boom solar sprayer and a conventional hydraulic sprayer (gun sprayer). The experiments were carried out during 2014/2015 seasons to apply the compost tea in apple trees under Egyptian field conditions. Two different composts teas, the compost tea ACT1 and ACT2, were applied under laboratory conditions. The 10 gm of yeast was added for both compost teas (ACT) as the marker of the microorganism in the compost tea. If the yeast cells are crushed after spraying this may increase the nutrition value of the compost tea.

Microscope with digital camera and software Image J V1.5 program was used to count the yeasts cells before and after application.

¹ Dept. Agric. Eng. Dept Fac, of Agriculture, Kafr El-Sheikh Univ.33516, Egypt, sehsah_2000@yahoo.de

² Botany Dept Fac, of Agriculture, Kafr El-Sheikh Univ.33516, Egypt

Results and Discussion

The results indicate that the vertical hydraulic solar sprayer may be use to apply the organic foliar composter tea in apple trees field under local conditions.

The composter tea with yeast ACT1 gave the good result compared to the compost tea ACT2 (fig 1).

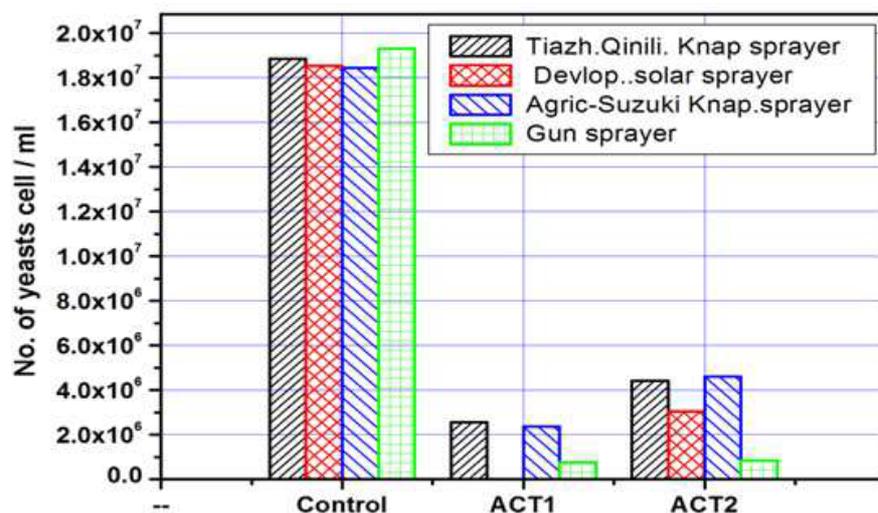


Figure1: Effect of different techniques sprayer on the organic compost tea under laboratory conditions.

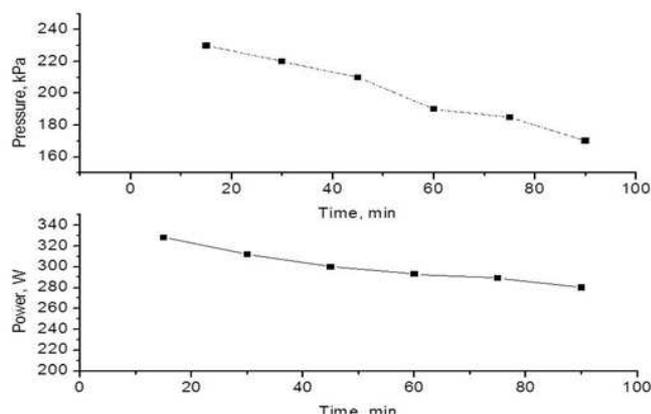


Figure 2: Effect of the operating time for solar development sprayer on the power requirement.

The solar development vertical sprayer may be able to operate at low pressure 200 kPa at 0.3 kw for around 50 min (fig.2) and it is producing the lower drift compared to the gun sprayer and two knapsack sprayers (suzuki and Tiazh.Qi) The conventional hydraulic sprayer (gun sprayer) gave good results to apply the compost tea with low values of number of micro-organisms (yeast cells). The low values of yeasts after treatment mean that there is the highest damage or crush of yeast cells and the nutrition will be increasing.

References

Sehsah, E.E. and Belal, E.B. (2012). Direct injection technique for bio-pesticide spray. *Misr J. Ag. Eng.*, Vol. **29** No. (3): 875-892.

Citation of the full publication

The citation of the full publication will be found on Ecofruit website as soon as available.