



EFFECT OF ORGANIC BASED COMPOST TEAS ON PEPINO (*SOLANUM MURICATUM*) GROWTH IN ORGANIC CULTURE

(1),Jamale Javanmardi(2)

(1)Department of Horticulture, M.Sc student of Agriculture, shiraz University, Iran
(2)Department of Horticulture, Faculty of Agriculture, shiraz University, Iran

1. ABSTRACT

Compost tea, in modern terminology is a compost extract, plant extracts, liquid manures and compost teas can be further understood in the context of their influences on the rhizosphere and phyllosphere. Also, manure and compost tea production is a brewing process that extracts microorganisms from compost or manure followed by microbial growth and multiplication including beneficial bacteria and fungi.

To find out the effects of organic based compost teas on some vegetative traits including the height of stem before the appear of first flower, number of leaf before the first flower was appear and reproductive traits like The number of flower per bush, the number of day to flowering in randomized complete block design with three replications was conducted. organic based compost teas treatments include 4 levels namely chicken manure tea, cow manure tea, sheep manure tea and vermicompost tea and no fertilization (control). results showed that organic based compost teas exerted a significant effect on the number of leaf before the appear of first flower and number of flower per bush.

Sheep manure tea treatment showed a highest effect than other treatments on the number of flower and mean number of leaf per bush before flowering and promote the flowering, fruit set and fruit ripening.

2. INTRODUCTION

There is a global impact for organic farming through recycling of organic waste for persistent agriculture as well as for a pollution-free environment. for the development of sustainable farming, waste enrichment is of interest. Involvement of earthworms (*Eisenia foetida*) for the degradation of organic wastes and production of vermicompost is near commercialization. (Kumar et al., 2001). compost tea, in modern terminology is a compost extract, plant extracts, liquid manures and compost teas can be further understood in the context of their influences on the rhizosphere and phyllosphere. also, manure and compost tea production is a brewing process that extracts microorganisms from compost or manure followed by microbial growth and multiplication including beneficial bacteria, fungi and protozoa (Ingham., 2005). Soil application of compost with compost tea gave better effect on all vegetative characteristics and leaves chemical constituents of pigments, macro and micro elements, total carbohydrates, C/N ratio and fruit yield compared to control of pear trees (Mohammed et al., 2010).



Furthermore, yeast extracts contains vitamins B1 (Thiamin), B6 (Pyridoxine) and glucine (Abou-Zaid., 1984). It aids in activating photosynthesis process through enhancing the released carbon dioxide (Larson et al., 1962).also, it contains proteins and cytokinen, application of yeast extract was very effective in improving vine growth, nutritional status and yield and fruit quality than untreated vines (Gobara et al., 2002).

The pepino (*Solanum muricatum* Aiton) is a domesticate of Andean origin vegetatively propagated by stem cuttings and esteemed for its edible fruit, a berry that is juicy, scented, mild sweet, and that can be highly variable in shape and colour. the pepino has been grown for thousands of years in the Andean region, and it was an important crop during the times of the Inca Empire. However, until recently, concurrent with increasing interest in international markets, the pepino has been grown largely for local consumption(Yalçin., 2010).

As ripe pepino fruits are sensitive to bruising during handling and transport, pepino production areas should be located near the consumption countries. This offers interesting possibilities for this crop in Mediterranean climate areas from Europe (Prohens et al., 1999). there is increasing production and commercialization in European fruit markets (Martinez-Romero et al., 2003). Because of the increasing demand of pepino fruits, several attempts have been made to introduce this crop in several regions of Mediterranean climate (Prohens et al., 2005) such as Turkey.

3. MATERIAL AND METHODS

A randomized complete block experiment with three replications was conducted to find out the effects of organic based compost teas. This experiment started in November 2010 and finished in september 2011 in shiraz (Iran). The compost tea treatments used in this study include chicken manure tea(Ch),cow manure tea(C),sheep manure tea(Sh) and vermicompost tea(V).

Twenty centimeter long herbaceous and semi hardwood cuttings with bark and leaves were taken. Cuttings should have 2-3 leaves at the top and 3-5 buds. The other end is cut with an angle. They were taken out, and planted out in pots with perlite and peat moss and bed soil 1:1:1 mixture. The pots were placed in a greenhouse. The rooted cuttings were transplanted into field and planted out in their permanent bed after spring frost. The fertilizer containing vermicompost tea was applying before flowering and the other treatment was applying after flowering to once a week. vegetative traits like the height of stem before the appear of first flower, number of leaf before the appear of first flower and reproductive traits like The number of flower per bush counted, the number of day to flowering counted. Collected data from the randomized complete block design was analyzed by the SAS software. Mean comparison analysis was done by LSD test.

4. RESULT

Results showed that organic based compost teas exerted a significant effect on the number of leaf before the first flower was appear and number of flower per bush.

4-1. effects of organic based compost teas on number of flower per bush

Organic based compost teas showed a significant effect on the number of flower, the most mean number of flower (91.08 flower) was observed in once a week sheep manure tea treatment which had significant difference with control and other organic based compost (fig 1).

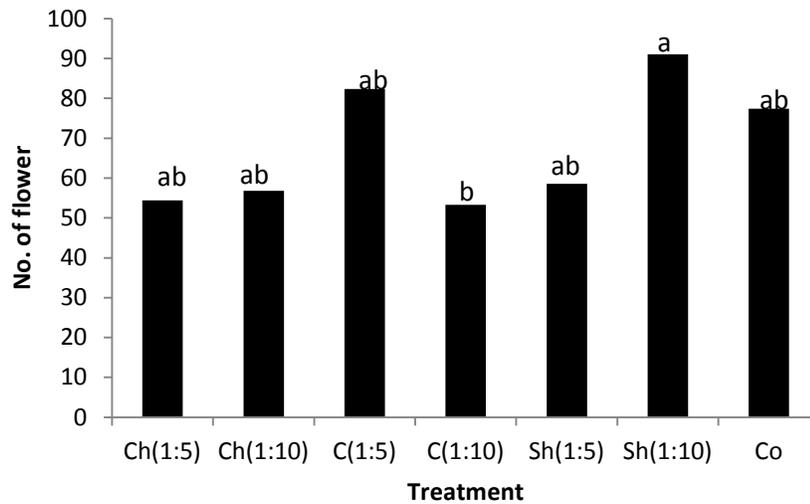


Fig1:effect of organic based compost teas on number of flower per bush.

4-2. effects of organic based compost teas on number of leaf per bush before flowering

Organic based compost teas showed a significant effect on the number of leaf per bush before flowering ,the highest mean number of leaf per bush before flowering (12.833)were observed to chicken manure tea(1:10) in once a week which had significant difference organic based compost teas in once a week except control treatment (Fig 2). The highest mean number of leaf per bush before flowering in chicken manure tea(1:10) and control treatment indicate increase vegetative growth before flowering and delay the flowering, fruit set and fruit ripening.However the lowest mean number of leaf per bush before flowering (9.917)were observed to sheep manure tea (1:10) in once a week indicate decrease vegetative growth before flowering and promote the flowering, fruit set and fruit ripening.

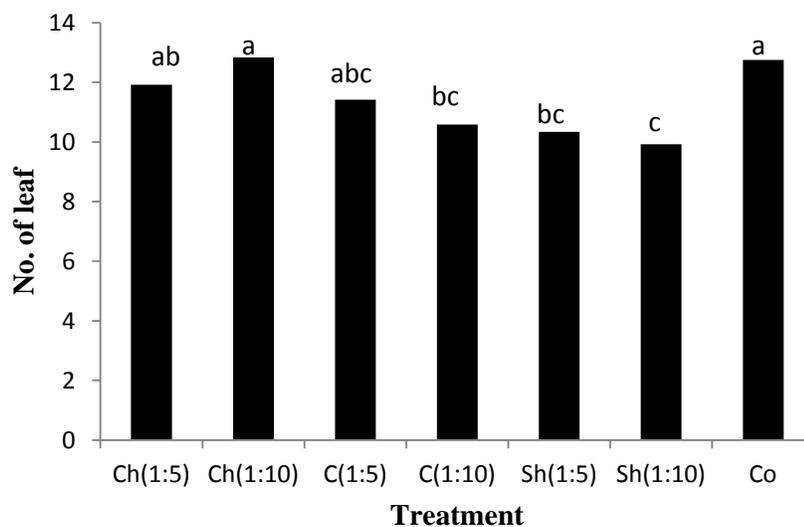


Fig 2:effect of organic based compost teas on number of leaf per bush before flowering.



5. CONCLUSION

In conclusion, organic based compost teas allows an advancement of reproductive growth and improves pepino fruit set. Sheep manure tea treatment showed a significant effect on the number of flower and mean number of leaf per bush before the flowering and promote the flowering, fruit set and fruit ripening.

6. REFERENCES

1. Abou-Zaid M. 1984. Biochemical studies on Fodder yeast. Ph.D. Thesis, Fac. Agric, Cairo Univ. Egypt.
2. Fayed TA . 2010. Optimizing Yield, Fruit Quality and Nutrition Status of Roghiani Olives Grown in Libya Using Some Organic Extracts. *Journal of Horticultural Science & Ornamental Plants*, 2 (2), 63-78.
3. Gobara, AA. Akl A.M. Wassel A.M. and Abada M.A. 2002. Effect of yeast and some micro nutrients on the yield and quality of Red Roomy grapevines. *Tanta Univ. J, Agric. Res*, 28, 709-719.
4. Ingham E. 2005. The compost tea brewing manual as printings. Soil Food Web Incorporated, Ovegan, 3, 31-32.
5. Kumar V. Singh KP. 2001. Enriching vermicompost by nitrogen fixing and phosphate solubilizing bacteria. *Bioresource Technology*, 76 ,173-175.
6. Larson, P. Herbo A. Klangson S. and Ashain T. 1962. Studies on the biogenesis of some compounds in *Acetobacterxyliam*. *Plant Phys*, 15,552-565.
7. Mohammed SM.. Fayed TA. Esmail A.F. and Abdou N.A. 2010. Growth, nutrient statues and yield of Le Cont pear trees as influenced by some organic and bio-fertilizer rates compared with chemical fertilizer. *Bull. Fac. Agric, Cairo Univ*, 61, 17-32.
8. Martinez-Romero D. Serrano M. Valero D. 2003. Physiological changes in pepino (*Solanum muricatum* Ait.) fruit stored at chilling and non-chilling temperatures. *Postharvest Biol. Technol*, 30, 177-186.
9. Prohens J. Rodriguez-Burruezo A. Nuez F . 2005. Utilization of genetic resources for the introduction and adaptation of exotic vegetable crops: The case of pepino (*Solanum muricatum*). *Euphytica*, 146, 133-142.
10. Prohens J. Ruiz JJ. Nuez F. 1999. Yield, earliness and fruit quality of pepino clones and their hybrids in the autumn-winter cycle. *J. Sci. Food Agric*, 79, 340-346.
11. Yalçın H. 2010. Effect of ripening period on composition of pepino (*Solanum muricatum*) fruit grown in Turkey. *African Journal of Biotechnology*, 9(25), 3901-3903.