COMPARATIVE STUDIES ON THE EFFECT OF SOIL SOLARIZATION AND METHYL BROMIDE FUMIGATION ON GROWTH, YIELD AND QUALITY OF FRESH STRAWBERRY PLANTATIONS

BY

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B.Sc. Agric. Cooperative Sciences,The High Institute of Agricultural Cooperation, 1991

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ABSTRACT

Mohsen El-Sayed Mohamed, "Comparative studies on the effect of soil solarization and methyl bromide fumigation on growth, yield and quality of fresh strawberry plantations". Unpublished M. Sc. Thesis, Ain Shams University, Faculty of Agriculture, Dep. of Horticulture 2005.

The effect of solarization and fumigation with methyl bromide (MB) as well as bio-sterilization on withNemaless on productivity and fruit quality of strawberry was investigated during the two successive seasons of 2001/2002 and 2002/2003. There were nine treatments namely, "soil solarization for one month, soil solarization for two months, soil fumigation with methyl bromide (MB) with dose 30 g/m^2, soil fumigation with methyl bromide (MB) with dose 50 g/m^2, soil fumigation with methyl bromide (MB) with dose 70 g/m^2, soil solarization for one month combined with methyl bromide (MB) by dose 30 g/m^2, soil solarization for two months combined with methyl, bromide (MB) by dose 30 g/m^2, Bio-sterilization by Nemaless, non fumigated by methyl bromide (MB) and without solarization (control)".

Results demonstrated that, plant length, number of leaves per plant, average leaf area, root length and crown diameter were significantly increased by fumigation with (MB) at different test rates (30,50, or $70g/m^2$) as compared with solarization or using Nemaless in the two tested seasons. Significant increments were obtained also in early and total yield as well as total soluble solids and ascorbic acid when the soil was fumigated with (MB) treatment as compared with solarization or using Nemaless. The highest total yield was

obtaind with treatments (MB) at 70g/m^2, followed, in decreasing order, by (MB) at 50g/m^2, two month solarization plus (MB) 30g/m^2, one month solarization plus (MB) 30g/m^2, (MB) 30g/m^2, two months solarization, one month solarization, Nemaless and control in the both tested seasons, respectively. Nemaless caused significant increments in early and total yield compared with the control in the two tested seasons.

Results indicated also that in order to improve the vegetative growth and to increase the high yielding ability of strawberry cv. "Camarosa" it is recommended to fumigate the soil with MB and / or using soil solarization plus MB at 30g/m^2. Moreover, in strawberry fields where weeds show serious problem, it is better to use the soil solarization for one or two months to control weeds of both fumigated and non fumigated soil. The results of this study provide evidence to suggest that a better understanding of different fumigation methods may aid us in our efforts to improve the management of strawberry production.

Key words: Strawberry (*Fragaria x ananassa*, Duch.), Methyl Bromide, Solarization, Nemaless, Bio-fumigation.

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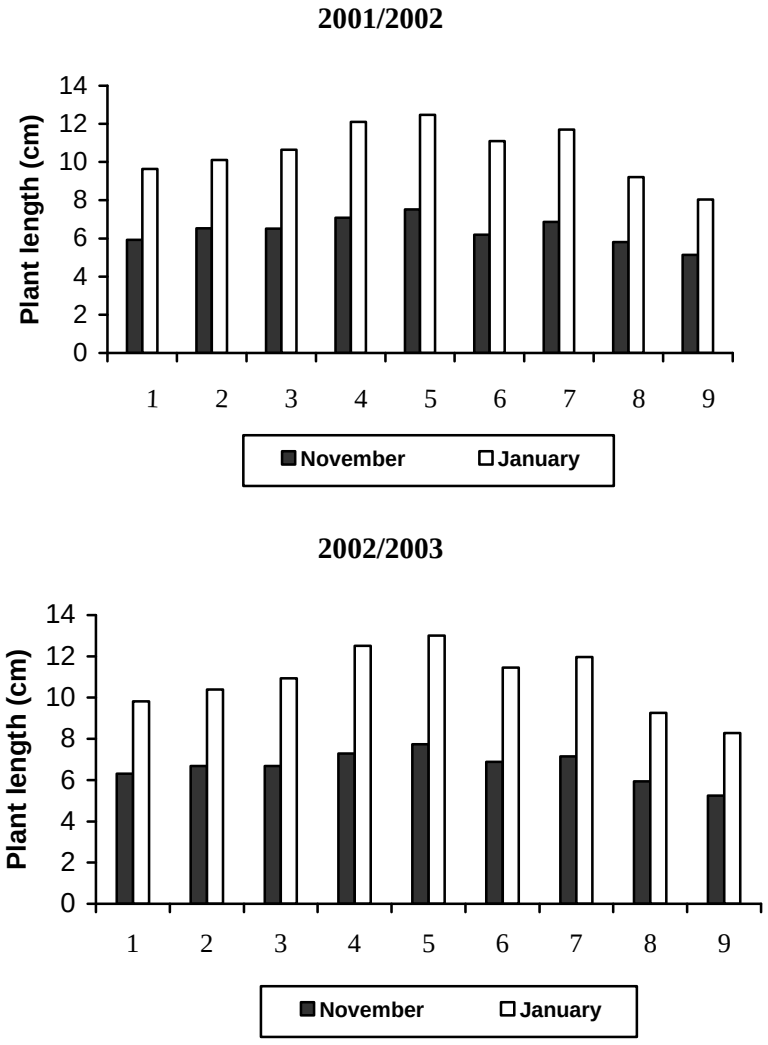

1	One month solarization	4	Methyl bromide 50g/m^2	7	Two months solarization + MB 30g/m^2
2	Two months solarization	5	Methyl bromide 70g/m^2	8	Nemaless
3	Methyl bromide 30g/m^2	6	One month solarization + MB 30g/m^2	9	Control

Fig. (1): Effect of soil solarization, MB fumigation, their combination and Nemaless on plant length.

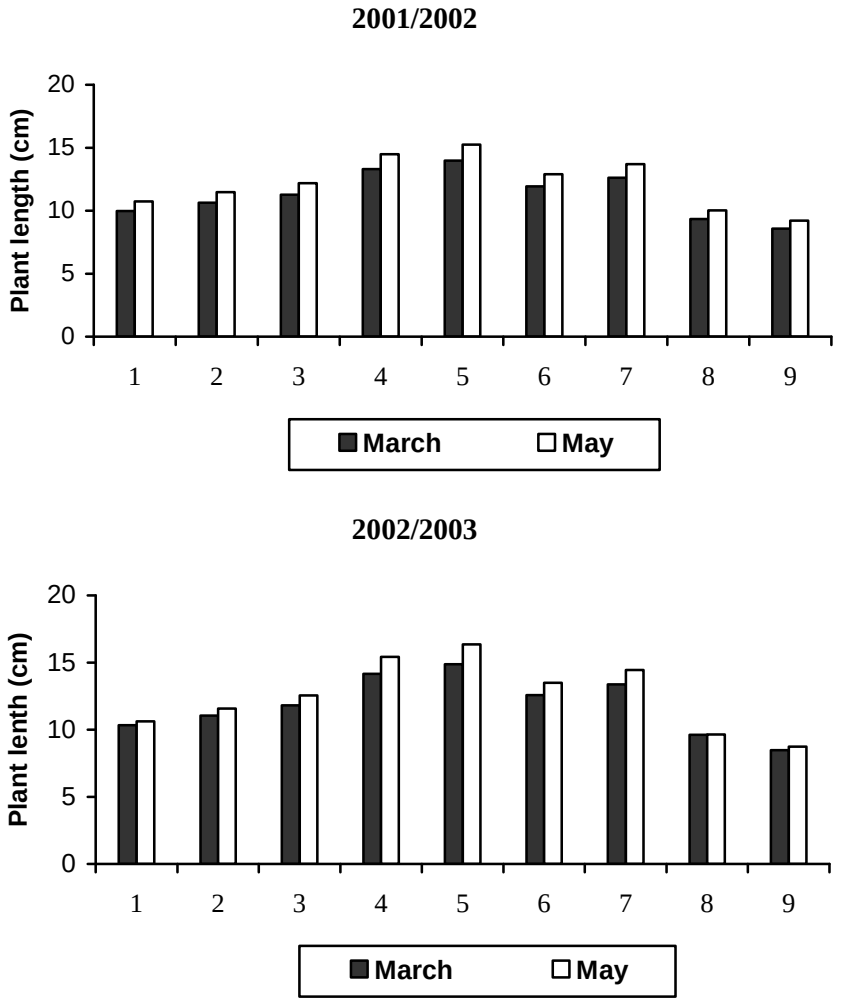

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Fig. (2): Effect of soil solarization, MB fumigation their combination and Nemaless on plant length.