

Investigation on the effects of black plastic mulch and plant density on the growth and yield muskmelon

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Nowadays, with the use of black plastic mulch in solving different cultivating cultural like weeds abundance, accumulation of salts on soil surface, soil crust and etc, some considerable results in improving the vegetative growth and crop yield have been obtained. With respect to the effects of black plastic mulch (BPM) on the plant shoot growth, determining of optimum plant density under the situation of using BPM has greater importance. In order to obtain the purpose, a split plot experimental design with 4 replications was arranged and conducted at the Research Center of Horticulture Department Faculty of Agriculture, University of Tehran, on the muskmelon (*Cucumis melo* cv. Semsory-e-Varamin) in 1999. Experimental treatments were plant density (22220, 14815, 11110 plant / ha) with 1.5 m row distance and 0.3, 0.45 and 0.6 m within planting row (WPR) distance and BPM (with BPM and without it). ANOVA results indicated that BPM had significant effects on all indices of yield and growth ($P > 1$). Plant density had significant effect on average fruit weight, fruit No/plant, leaf area, leaf and stem dry and fresh weight, leaf number and plant length ($P > 0.05$) but marketable fruit yield, earliness percent, total yield, T.S.S.(%), fruit dry matter and number of branches were not affected. Average fruit weight, fruit No/plant, leaf and stem dry and fresh weight, leaf number and plant length were decreased linearly with increasing plant density. In bare soil treatments, marketable fruit yield was increased linearly (22.4 to 28.8 ton/ha) with decreasing WPR distance (0.6 to 0.3m), but marketable fruit yield was not affected by decreasing WPR distance in plots with mulch. In BPM treatments, maximum of the yield (45 ton/ha) was obtained in 0.45 m WPR distance treatment.

interval 7 and 14 days in comparison with control (bare ground with irrigation interval 7 days) increased yield 89% and 74% respectively. Marketable yield was same in mulch with 21 days interval irrigation and control. This study showed that by using black polyethylene mulch, we can change irrigation interval from 7 to 14 days, in this case not only water consumption is saved, but also the yield is considerably increased.