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不同土壤水分下限对大棚滴灌甜瓜产量和品质的影响

Effects of drip irrigation threshold on yield and quality of muskmelon in plastic greenhouse

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英文关键词: [soil moisture](#) [irrigation](#) [quality management](#) [drip irrigation](#) [Muskmelon \(Cucumis melo L.\)](#) [plastic greenhouse](#)

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中文摘要:

以厚皮甜瓜品种伊莉莎白为材料,研究大棚滴灌条件下营养生长期不同土壤水分下限(75%田间持水量,I75;65%田间持水量,I65;55%田间持水量,I55;45%田间持水量,I45)对甜瓜生长、产量、品质以及灌溉水分利用效率的影响,并以沟灌(G75)作为对照。结果表明,株高、茎粗、叶面积和地上部干重均随着营养生长期土壤水分下限的降低而减小。I75果实横径、皮厚和肉厚均最大,果形指数最小;I65果实纵径最大。果实品质方面,总可溶性固形物(TSS)含量为:I65>I55>I75>I45;可溶性糖含量为:I55>I65>I45>I75;维生素C(Vc)含量为:I55>I65>I75>I45;可溶性蛋白质含量为:I55>I65>I45>I75;游离氨基酸总量为:I45>I65>I55>I75。I75的产量和平均单果重最高;I65的灌溉水分利用效率最高,达到29.16 kg/m³,相比沟灌对照提高76.4%,可节水58.1%,而平均单果重仅比对照下降3.2%。综合考虑产量和品质,可以选择65%田间持水量作为武汉地区厚皮甜瓜营养生长期适宜的土壤水分下限指标。

英文摘要:

In order to investigate the effects of different soil water content threshold on growth, yield production and irrigation water utility efficiency of muskmelon (Cucumis melo L., Yilishabai variety) in greenhouse, four treatments of soil water content thresholds (I45 with 45% field capacity, I55 with 55% field capacity, I65 with 65% field capacity, I75 with 75% field capacity) were conducted, and a furrow irrigation (G75 with 75% field capacity) as control treatment. The results showed that plant height, stem diameter, leaf area and aboveground biomass decreased with soil water content threshold declined. Values of fruit diameter, pericarp thickness and flesh thickness are the largest for treatment I75, while the index of fruit shape is the least; but the fruit length of I65 is the biggest. As to the fruit quality, total soluble solids (TSS) content ranked as: I65>I55>I75>I45; soluble sugar content ranked as: I55>I65>I45>I75; Vitamin C (Vc) content ranked as: I55>I65>I75>I45; soluble protein content as follows: I55>I65>I45>I75; free amino acid content as follows: I45>I65>I55>I75. The yield and mean fruit weight are highest for I75; the value of water use efficiency for I65 is the highest among the treatments as to 29.16 kg/m³ that is 76.4% higher than that of furrow irrigation (G75), it can save irrigation water 58.1% and the mean fruit weight only declined 3.2% compared with furrow irrigation. Therefore, based on production and quality, 65% field capacity would be the most appropriate thresholds for muskmelon starting irrigation on vegetative growth stage.

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