

ABSTRACT

The experiments were carried out on cucumber (*Cucumis sativus*, L.) cv. Nile F₁ hybrid under green houses at Kaha Research Farm, Hort. Res. Inst., ARC, Egypt. The aim of study was to compare the effect of chicken manure and mineral fertilizers under different methods of agriculture and applications. Therefore, the investigation consisted of two experiments each them was cultivated in the winter seasons of 2001/2002 and 2002/2003. The first trail was studying the effect of chicken manure and mineral fertilizers on cucumber cultivated on either rice straw bales or soil. Meanwhile, the second experiment was conducted to study the effect of chicken manure and mineral solutions added to the nutrient film technique in intermittent on rice straw cubes and continuous flow on peat moss and vermiculite.

Data obtained on growth, fresh and dry weight, chlorophyll content in leaves, fruit sitting, yield, fruit characteristics, carbohydrates in fruit, nitrogen composition (total N, nitrate and nitrite) and heavy metals (Pb, Cd and Ni) concentration in cucumber plants under greenhouse.

The results indicated that using mineral fertilizers with rice straw bales was the best comparing with the other treatments concerning plant growth, chlorophyll, yield and fruit characteristics. Similar results were obtained by using mineral fertilizers with continuous solution flow. Chicken manure with rice straw bales or intermittent flow gave the highest carbohydrate content in fruits. Nitrogen composition and heavy metals were increased with mineral fertilizers and soil culture or continuous flow compared with the other treatments.

Key words: Cucumber (*Cucumis sativus*, L.) - Chicken manure mineral fertilizers - intermittent and continuous flow - rice straw bales rice straw cubs - Nutrient Film Technique

المستخلص

أجريت التجربة خلال موسمين زراعيين متتاليين ٢٠٠٢/٢٠٠٣ و ٢٠٠١/٢٠٠٢ في مزرعة بحوث الخضر بقها وقد أجريت التجربة علي نباتات الخيار صنف نايل -هذه الدراسة أجريت بهدف دراسة تأثير استخدام زرق الدواجن و الأسمدة المعدنية مع استخدام بالات قش الأرز كوسط للزراعة والزراعة في التربة، كذلك دراسة تأثير استخدام مستخلص زرق الدواجن والأسمدة المعدنية مع الزراعة في المحاليل المغذية بنظام المحلول المتقطع مع مكعبات من قش الأرز كوسط للنمو ونظام المحلول المستمر بدون قش علي كل من النمو الخضري، نسبة التنفيل في الثمار، المحصول، جودة الثمار، الكلوروفيل في الأوراق، نسبة الكربوهيدرات في الثمار، أيضا تراكم النترات والنيترت في الثمار و العناصر الثقيلة في الأجزاء المختلفة للنبات .

تلخصت النتائج المنحصل عليها في زيادة نمو نباتات الخيار (طول النبات، عدد الأوراق، مساحة الورقة ، الوزن الطازج والجاف للنبات) الكلوروفيل في الاوراق وكذلك المحصول المبكر والكلبي وجودة الثمار مع استخدام الأسمدة المعدنية وبالات القش في التجربة الأولى أو المحلول المستمر في التجربة الثانية مقارنة بالمعاملات الاخرى، اما الكربوهيدرات في الثمار فكانت اعلى مع استخدام زرق الدواجن وبالات القش في التجربة الأولى او المحلول المتقطع ومكعبات القش قي التجربة الثانية، اما بالنسبة الي تركيز النيتروجين والنترات والنيترت في الثمار وكذلك العناصر الثقيلة (كادميوم- رصاص - نيكل) فكانت عالية مع استخدام الأسمدة المعدنية والزراعة في التربة او المحلول المستمر .

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ABBERRVIATIONS

CO₂: Carbon dioxide
C/N: Carbon/nitrogen ratio
D.W: Dry weight
EC: Electrical conductivity
FYM: Farm yard manure
NFT: Nutrient film technique
NO₃: Nitrate
NO₂: Nitrite
NH₄: Ammonium
NPK: Nitrogen, Phosphorus, potassium
ppm: Part per million
Cd: Cadmium
Ni: Nickel
Pb: Lead
WHO: World Health Organization
FAO: Food and Agriculture Organization