

为消除或减小废旧基质对环境的污染,研究和开发有机基质或性能稳定,使用寿命长、适合于水培的岩棉替代产品越来越紧迫。英国和比利时在这方面的研究已有突破。松木屑、树皮、椰壳作为无土栽培基质都有上佳的性能,尤以椰壳的性能已引起科研和生产者的极大兴趣和关注。聚氨酯乙醚泡沫板(Polyurethane Ether Foam)使用寿命可达10年以上,水培蕃茄早期产量和总产量与岩棉培无差异。

基质标准化是控制生产标准化的基本条件。荷兰的一个叫 Foundation R. H. P. 机构,专门从事基质标准化工作,并已提出岩棉(Rockwool)、浮石(Pumice Stone)、膨胀土粒(Expanded Clay Granules)、珍珠岩(Perlite)、泥炭(Peat)、椰壳(Coir)等主要基质在物理、化学和生物等方面标准化规格和技术要求。

3. 根系通气性

NFT系统根系温度波动大,对电源的依赖性

强,虽然通气性问题不突出,但一次性投资和运行成本都较高;DFT系统克服了前者的缺陷,但根系通气不良又抑制了其发展。浙江农科院提出的浮板毛细管水培系统和华南农大提出的改进DFT系统有效地解决了水培系统中根系通气不良的问题,具有较好的发展前景。

4. 营养液成份与作物生长

本次会议着重对钙、铵、锌等元素在植株中的分布、缺少时植株的表现形式以及它们在植株中的运输、对光合作用、产量、品质和病情指数等的影响作了较全面的讨论。发达国家对营养液成份的研究已深入到了对各种元素的单独分析。相比之下,我国大部分研究还停留在对营养液pH和Ec值的监控水平上,研究手段上的差距是明显的,这不仅与我国分析仪器的水平有关,用于作物栽培的温室环境条件也远未能达到人为控制的水平。这方面的基础研究尚待进一步加强。

(周长吉)

'94 中国国际无土栽培会议论文集题录

I 回顾与展望(General)

1. Current and Future Trends in Soilless Culture.

P. Adams, Horticulture Research International, U. K. (英国)

2. The Development History of Hydroponics in China. Wang Hua (王化), 上海农科院园艺研究所

3. Present Situation and Development of Soilless Culture in China, Zheng Guanghua (郑光华)等, 中国农科院蔬菜花卉研究所等

II 设施(Systems)

4. Development of an Automated Vegetable Factory. N Yamamoto, et al, Kyushu Electric Power Co., Japan (日本)

5. The Floating Capillary Hydroponics for Vegetable Culture. Zhang Dewei (张德威)等, 浙江农科院东南沿海地区无土栽培研究中心。

6. Principle and Application of Solid Manure Culture. Zheng Guanghua (郑光华)等, 中国农科院蔬菜花卉研究所等

7. Design and Application of a Hydroponic Production Line With Deep Flow Troughs Made of Cement and Bricks. Lian Zhaohuang 等, 华南农业大学植物营养实验室

8. Part - substrate Trough Culture System of Fruit Vegetable Production. Bu Chongxing 等, Sinosys Development Co., Beijing, China

9. Studies on Different Types of Sand Culture of Vegetables. Li Weimin (李为民), 天津蔬菜研究所

10. Development of Organic Substrates for Hy-

droponic Cucumber Production. M Hardgrave, et al, Horticulture Research International, England (英格兰)

11. Growth and Yield Responses of Cucumber to Soilless Substrates and Organic Manure. Xu Zhihao (徐志豪)等, 浙江农科院东南沿海地区无土栽培研究中心

12. Effect of Soilless Composts From Edible Fungi Culture on the Growth and Nutrient Status of Lettuce and Tomato Transplants. Xu Zhihao (徐志豪)等, 浙江农科院东南沿海地区无土栽培研究中心

13. Quality Control of Horticultural Substrates in the Netherlands. Ing W L van Schie, Foundation R. H. P., The Netherlands (荷兰)

14. A Decade of Research on Polyurethane Ether Foam (PUR) Substrates. F Benoit, et al, European Vegetable R & D Centre, Belgium (比利时)

15. Effect of Substrate on Growth and Yield of Fruit Vegetable in Soilless Cultuture. Chen Xiurong (陈秀荣)等, 新疆克拉玛依石油管理局农业研究所

16. The Effects of Rock Wool Volume and Duration in Seedling on the Production of Tomato in Soilless Culture. Yu Jihua 等, 甘肃农业大学园艺系

17. Effects of Solution Supply Amount on Growth and Development of Cucumber Cultivated With Two Kinds of Rockwool. Lu Gang 等, 北京农业大学园艺系

III 营养与通气 (Nutrition and Aeration)

18. Effect of Calcium and Ammonium on the Appearance of Secondary Shoot Chlorosis in Rockwool Grown Cucumbers. C Sonneveld, et al, Glasshouse Crops Research Station, The Netherlands (荷兰)

19. Calcium Distribution in Tomato Plants and Blossom-End Rot. P Adams, et al, Horticulture Research International, U. K. (英国)

20. Effect of Anion Variations in a Nutrient Solution on the Growth and Essential Oil Content

and Composition in Perilla Plants. T Takano, et al, College of Agriculture, Meijo University, Japan (日本)

21. The Influence of Phosphorus on the Root Growth of Radish Grown in Solution Culture. Sun Yuxia (孙玉霞)等, 河北永年邯郸农校

22. Studies of *Zingiber officinale* Rosc. in Solution Culture I. Effect of Different levels of Zinc Supply on Growth and Photosynthesis. Bing-song Cheng, et al, 山东农业大学植物生理与生物化学实验室

23. Studies of *Zingiber officinale* Rosc. in Solution Culture II Effects of Different Levels of Zinc Supply on Leaf and Chloroplast Structure. Bing-song Cheng, et al, 山东农业大学植物生理与生物化学实验室

24. Studies of *Zingiber officinale* Rosc. in Solution Culture. III. Effects of Different Levels of Zinc Supply on Some Components and Enzymes. Bing-song Cheng, et al, 山东农业大学植物生理与生物化学实验室

25. The Effects of Fe on the Growth and the Physiological and Biochemical Characteristics of Roots of Lettuce and Mustard in Hydroponic Culture. Liu Shizhe (刘士哲)等, 华南农业大学植物营养实验室。

26. Frequency of Nutrient Solution Changes Affects Yield, Elemental Concentration and Water Use of Sweetpotato Grown by Use of Nutrient Film Technique. D G Mortley, et al, George Washington Carver Agricultural Experiment Station, Tuskegee University, USA (美国)

27. The Distribution of Art Pumpkin Roots in the Floating Capillary Hydroponics in Relation to Environmental Condition. Xu Zhihao (徐志豪)等, 浙江农科院东南沿海地区无土栽培研究中心

28. Study on the Aeration in Substrate in Soilless Cutting propagation. Zhou Changji (周长吉), 中国农业工程研究设计院

29. Computerized Automatic Control of Nutrient Solution in Hydroponics. Wang Lizhi, et al, 黑龙江农业现代化研究所。

IV 环境(Environment)

30. Daily and Yearly Evolution of Microclimatic Parameters and Pan Evaporation in Greenhouse. C Merlo, et al, Istituto di Idraulica Agraria dell' Università, Italy (意大利)

31. Study on the Photosynthetic Characteristics of Tomato in Greenhouse Soilless Culture. Xing Yuxian (邢禹贤)等, 山东农业大学

32. Effect of Day/Night Temperature Difference (DIF) on Growth and Photosynthesis of Tomato Seedlings. Chen Zhi-hui, et al, 浙江农业大学园艺系。

33. Effect of Soil Mulching by Different Plastics Sheefs on the Air and Root Temperatures. E Mavromatis, et al, Technological Educational Institution of Larissa, Faculty of Agricultural Science Department of Plant Production, Greece (希腊)

34. Study on Slipping and Dripping Critical Angle of Condensation Water on the Inside Surface of Non-soil culture Greenhouse Cover. Fu Lixia, 浙江农业大学工程技术学院

V 根系病害(Root diseases)

35. Autotoxic Potential of Cucumber Grown by Hydroponics. Jing Quan Yu, et al, Faculty of Agriculture, Shimane University, Japan(日本)。

36. Specific Disease and Pest Problems in Hydroponic Culture and Their Control. J Coosemans, Laboratory of Phytopathology and Plant Protection, Katholieke Universiteit Leuven

37. Disinfection of Recirculating Nutrient Solutions by Slow Sand Filtration. W Wohanka, Research Station Geisenheim, Department of Phytomedicine, Germany (德国)

VI 水上漂浮栽培(Floating Garden)

38. The Development of the Soilless Culture on Natural Water Surface in China. Li Zhi Zheng, 中国科学院上海植物生理研究所

39. Root Differentiation of Canna Lily Grown in Floating Soilless Culture System on the Water Surface of Lake. Zhou Guoning, et al, 杭州植物园

40. FloGar - A New Way for Water Gardening. Zhou Guoning, et al, 杭州植物园。

41. Effects of Calcium and Calmodulin on the Growth and Development of Tomato Fruit in Relation to Blossom-end Rot. Mu Yonghua, et al, 浙江农科院

42. Gravel Culture of *Phaseolus vulgaris* L. Huang Jiangzhong, et al, 浙江农业大学基础部。

43. A Survey of Study and Utilization of RCT (Rockwool Culture Technique) in China, Wang Xinghan (汪兴汉), 江苏农科院蔬菜作物研究所
(周长吉)