D-D1-27

Reasonable management on raising rice seedling of some media in machine transplanting cultivation

W.H. Yang*, J.C. Shin, Y.S. Cho, B.C. Koo, J.H. Seo, S.Y. Park, and S.E. Jeong
Division of Plant Physiology & Ecology, National Institute of Crop Science, RDA

In raising tray seedling for machine transplanting of the paddy rice, we had to check the proper procedure of rice seedling on different media for seedling growth of nursery period. We examined seedling growth of four kind of media for growing rice seedling in 2006 at NICS(National Institute of Crop Science), RDA. Four media were classified as the lighter artificial medium, the heavier artificial medium, mat type medium and conventional soil. Rice cultivar 'Daeanbyeo' was used in this test. Emergence process were treated in the two method of the non-heated stacked tray covered by polyethylene vinyl, and the electronic heated cabinet for seed sprouting. After emergence, we growed rice seedling on the wet soil nursery covered by PE. In the results, the lighter medium and mat type medium were occurred in non-rooted seedling after emergence of the heated equipment. However they had normal seedling in non-heated treatment for sprouting. Emergence ratio were higher in the lighter medium>mat medium>conventional soil>the heavier medium in order. Seedling height and shoot dry weight of 30 day old seedling were the heavier medium>the lighter medium >conventional soil >mat medium in sequence. In conclusion, if we raised rice seedling in the lighter or mat medium, non-heated stacked tray would be better in seedling emergence than the heated condition.
*Won-Ha Yang, 82-031-290-6680, yangwh@rda.go.kr

D-D1-28

Resource use efficiency of rice crops (*Oryza sativa* L., cv. Dongjinbyeo) under simulated global warming with elevated atmospheric CO_2

Thang Vu, Jae-Burhm Seo, Byoung-Man Kang, Myoung-Suck Lee, Chengjun Piao, Woo-Jung Choi, Han-Yong Kim*
College of Agriculture & Life Science, Chonnam National University,
300 Yongbong-dong, Buk-gu, Gwangju 500-757, Korea

Concurrent effects of elevated atmospheric CO_2 ([CO_2]) and temperature (Ta) on radiation-, water- and N-use efficiencies, defined as ratios of biomass or grain yield to intercepted photosynthetically active radiation (RUEb or RUEy), evapotranspiration-ET (WUEb or WUEy) and taken up N (NUEb or NUEy), respectively, of rice crops (*Oryza sativa* L., cv. Dongjinbyeo) were investigated in six temperature gradient chambers (TGCs) established in the field of Chonnam Nat'l Univ., Korea from 2004 to 2006. In TGCs, rice crops were exposed to a Ta range from ambient (25.9±0.1°C) to ambient+3°C with either ambient [CO_2] (378±8ppmV) or elevated [CO_2] (594±17ppmV) over whole seasons. Solar radiation was measured by LI-COR Sensors, ET by evapotranspirometers, and plant N by the Kjeldahl method. Experimental design was a split plot with three replications. Over three years and Ta regimes, elevated [CO_2] increased significantly all RUEb (11%), RUEy (9%), WUEb (23%), WUEy (21%), NUEb (8%) and NUEy (10%). Contrarily, over-1.3°C risen Ta decreased WUEb (4%), WUEy (43%) and NUEy (14-57%) over [CO_2] levels. Finally, in elevated [CO_2] with over-1.3°C risen Ta, WUEb increased by 18% but WUEy decreased by 30%, NUEb was not affected but NUEy decreased by 14-57% as compared with ambient [CO_2] and Ta though no interactive effects of CO_2 and Ta were detected.
*hyk1020@chonnam.ac.kr