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Studies on Direct Sowing Culture of Rice in Northern Kyushu : II. Evaluation of lodging tolerance by crown root thickness during seedling stage

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Abstract:

This study was undertaken to find a method of evaluating lodging tolerance under direct sowing culture in flooded paddy field by the crown root thickness of seedlings for the selection of good eating quality rice cultivars well adapted to direct sowing in Northern Kyushu. The crown root thickness of seedling at 18 days after sowing showed a significant ($p < 0.01$) positive correlation with the crown root thickness of the plant at 15 days after heading under direct sowing culture. Also, crown root thickness of seedlings at 18, 20 and 30 days after sowing showed a significant ($p < 0.01, 0.05$) negative correlation with lodging degree, and showed a significant ($P < 0.01, 0.05$) positive correlation with the pushing resistance under direct sowing culture. On the other hand, there was no correlation between crown root thickness of seedlings at 10 or 12 days after sowing and lodging degree and pushing resistance.

Furthermore, in the case of testing many good eating quality rice cultivars, crown root thickness of seedling at 30 days after sowing showed a significant ($p < 0.01$) negative correlation with lodging degree and a significant ($p < 0.05$) positive correlation with pushing resistance. In conclusion, we found that the lodging resistance of the cultivars with thick roots at the seedling stage was generally resistant. This leads us to suppose the varieties with good eating quality adapted for direct sowing culture could be selected at the juvenile stage based on crown root thickness of seedlings.

Keywords:

Crown root thickness, Direct sowing culture, Lodging tolerance, Northern Kyushu, Rice, Seedling stage, Varietal difference

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