Study on the Cultivation Methods of Transplanting the Turf Seedlings II. Effects of turf grass growth to the selected soils in seedling bed

MyungSun Lee
Department of Natural resources and Plant Sciences, SangJi University, Wonju 220-130, Korea

ABSTRACT

This experiment was conducted to investigate the effects of turf grass growth to seedling rates and bed soil types. The results of this experiment were summarized as follows; the more increasing the seedling rates, the plant height and leaf length were longer, but the number of leaf and number of branch were fewer. In case of transplanting of turf grass seedling by rice transplanting machine, it might be considered that the proper alternative bed soil was sandy loam soil with regarding to the economic aspects. The maximum seedling rate of turf grass in the seedling tray for rice was 1,000 of seedling amount due to the nutrient competition with intensive seedling. As the results indicated, it might be recommended that the proper alternative bed soil was sandy loam soil with 1,000 of seedling rates in case of transplanting of turf grass seedling by rice transplanting machine.

INTRODUCTION

Turf grass cultivated in all over the korea is a cold and warm season type. It has a cold registrant and a strong adaptation in poor environmental conditions at both cold and warm regions. Watschke, T.L(1990), Lee, M.S.(1988)

Also turf grass is the most popular plant in natural resources which is reduced the glare as same as providing the recreational function for human life with uniform green color.

Especially in respects of conservation countermeasures to the fallow land with opening the market of agricultural products, it is very important for research on turf grass cultivation to prevent a soil erosion due to the win and water and to provide cover which does not need to be replaced if properly managed relatively easy to grow. Beard, J. B. (1973), Portz, H. L.,J.J. Murray, & D. Y. Yeam(1981).

Table 1. Growth characteristics of turf grass with seeding rate

Seedling rates	Plant height(cm)	Leaf length(cm)	No. of leaves	No. of branches
500	9.4	7.0	26.4	8.4
1,000	12.3	9.0	15.7	4.5
2,000	13.7	10.2	19.2	4.4

Corresponding author : MyungSun Lee, Tel :033)730-0561 e-mail : mslee@sunglee@sangji.ac.kr

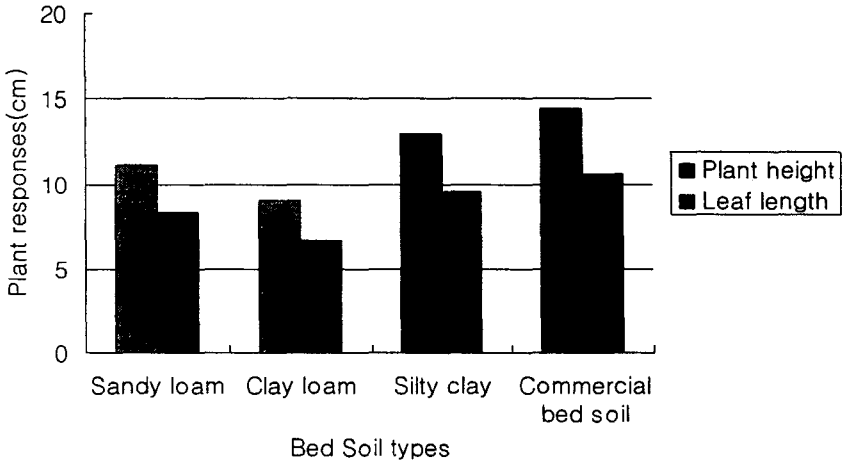

Fig. 1. Plant height and leaf length with selected bed soil types.
It shown that numbers of leaf and branch in commercial bed soil were greatest, but those in silty clay were fewest among the bed soil types.

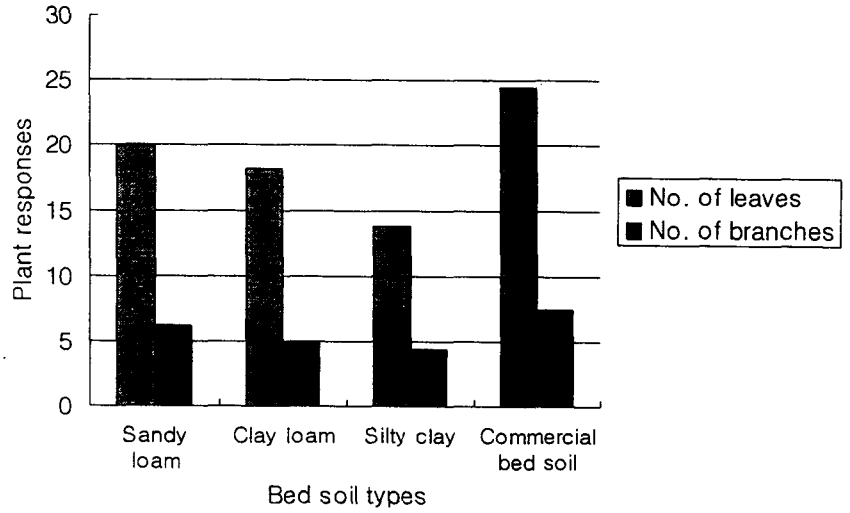

Fig. 2. Effects of plant responses to selected bed soil types.

Therefore, objective of this study was to investigate the effects of turf grass growth to seedling rates and selected soil bed types.

MATERIALS AND METHODS

This experiment was conducted in the private research station of turf grass at Go-Chon Meyn, Kim-Po city, Kyong-Ki Do in May, 2001. Seeds of turf grass was purchased in the seed store and sown in the seedling tray(60 × 30 × 3.5㎝) for rice.

Soils used as soil bed were silty clay of paddy soil, clay loam of upland soil, sandy loam of mountainous sliced soil and bed soil for horticultural seedling. Seedling rates were three levels as 500, 1,000 and 2,000 seeds, and cultivation methods were based on the

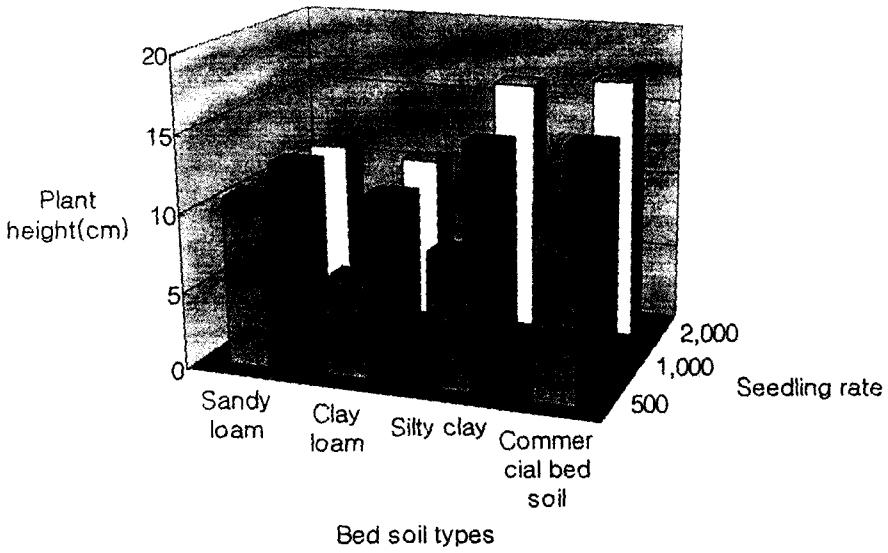

Fig. 3. Effects of plant hight to different seedling rates and bed soil types

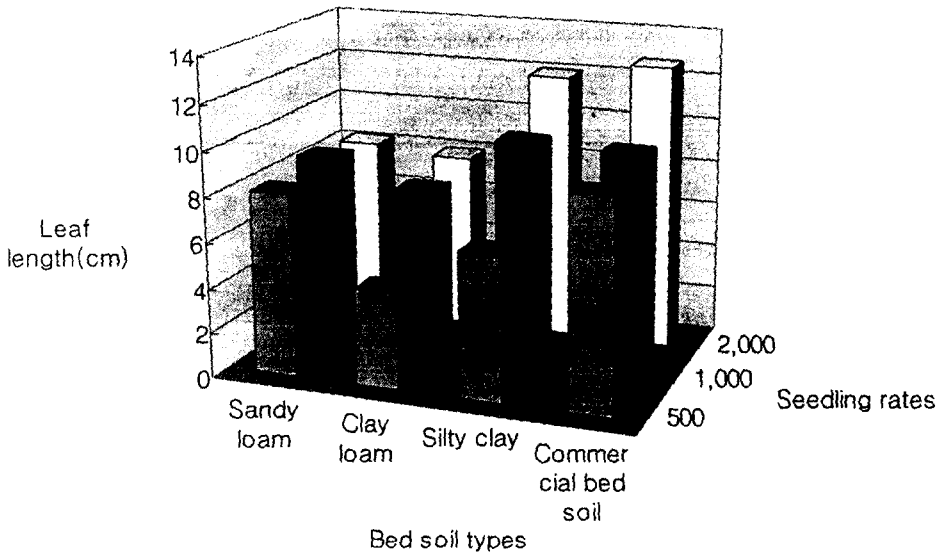

Fig. 4. Effects of Leaf length to different seedling rates and bed soil types

farming practices. Beard, J. B(1973), Gim, H. K(2001).

As the plant growth characteristics, plant height, leaf length, numbers of leaf and branch were measured at 30 days after sowing on the rice seedling tray.

The experimental design was randomized complete design with 4 replications.

RESULTS AND DISCUSSIONS

Growth characteristics of turf grass with seeding rate were described in table 1. Germination rate was approximately 64% in 2,000 seeding rate regardless of

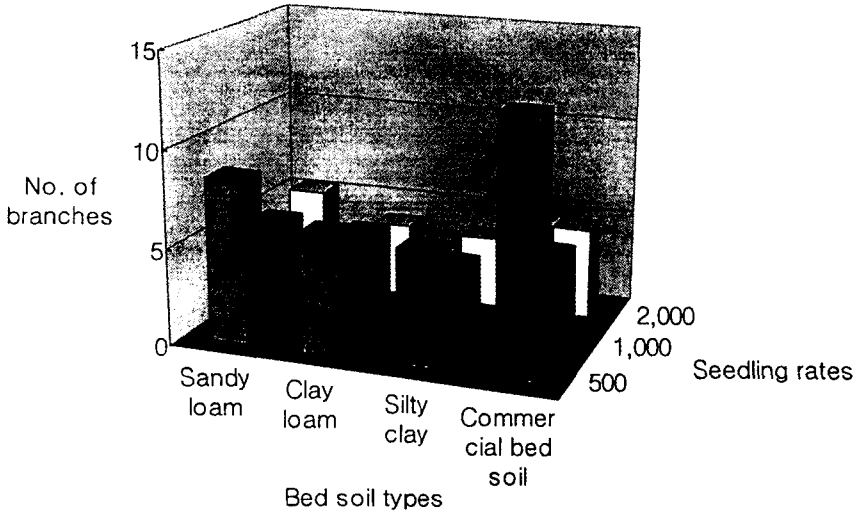

Fig. 5. Number of branch with different seedling rates and bed soil types

bed soil types. It was shown that the plant height and leaf length were longer, but the number of leaf and number of branch were fewer when the seeding rate is increased.

Growth responses of turf grass with different bed soils were indicated in figure 1 and 2. In respects of bed soil types, plant height and leaf length in commercial bed soil were highest at 14. 4 and 10.6 cm among the bed soils, respectively. However, it was appeared that plant hight and leaf length in clay loam soil ware shortest relative to the others.

In case of transplanting of turf grass seedling by rice transplanting machine, it might be considered that the proper alternative bed soil was sandy loam soil with regarding to the economic aspects.

Plant responses of turf grass with different seedling rates and bed soil types were shown in figure 3, 4 and 5. Plant height with 1,000 of seedling rate in sandy loam soil was longer than that with 2,000 of seedling rates relatives to the bed soils except the commercial bed soil. This tendency might be considered that the maximum seedling rate of turf grass in the seedling tray for rice was 1,000 of seedling amount due to the nutrient competition with intensive seedling. Therefore, in case of using sandy loam soil in the mountainous sliced soil as bed soil, it might be reduced the apparence rate of weed and minimized the vacant hill rate with using the rice transplanting machine. Also, it observed that plant heights in clay loam, silty clay and commercial bed soil with increasing the seedling rate were greater due to the deficiency of soil aeration(Fig. 3).

In the leaf length with different seedling rates and bed soil types, it appeared that the order of greater leaf length was the commercial bed soil>silty clay soil> sandy loam soil>clay loam soil.

The more increasing the seedling rates the greater plant height and leaf length in all over the bed soil types. However, it observed that the numbers of branch in 500 of seedling rates with commercial bed soil were the greatest, but those in 2,000 of seedling rates were fewer than 1,000 of seedling rates regardless of bed soil types.

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