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The Efficiency of Mechanization in Weed Control in Artificial Regeneration of Oriental Beech (Fagus orientalis Lipsky.)

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Abstract : In this study which has been conducted in Akçasu Forest Range District of Devrek Forest Directorate; 3 methods (cover removal with human force, cover removal with Hitachi F20 Excavator, and cover removal with agricultural equipment mounted on a Ferguson 240S agriculture tractor) utilized in weed control efforts in regeneration of degraded oriental beech forests have been compared. In this respect, 3 methods have been compared by determining certain work hours and standard durations of unit areas (1 hectare). For this purpose, evaluating the tasks made with human and machine force from the aspects of duration, productivity and costs, it has been aimed to determine the most productive method in accordance with the actual ecological conditions of research field. Within the scope of the study, the time studies have been conducted for 3 methods used in weed control efforts. While carrying out those studies, the performed implementations have been evaluated by dividing them into business stages. Also, the actual data have been used while calculating the cost accounts. In those calculations, the latest formulas and equations which are also used in developed countries have been utilized. The variance of analysis (ANOVA) was used in order to determine whether there is any statistically significant difference among obtained results, and the Duncan test was used for grouping if there is significant difference. According to the measurements and findings carried out within the scope of this study, it has been found during living cover removal efforts in regeneration efforts in demolished oriental beech forests that the removal of weed layer in 1 hectare of field has taken 920 hours with human force, 15.1 hours with excavator and 60 hours with an equipment mounted on a tractor. On the other hand, it has been determined that the cost of removal of living cover in unit area (1 hectare) was 3220.00 TL for man power, 788.70 TL for excavator and 2227.20 TL for equipment mounted on a tractor. According to the obtained results, it has been found that the utilization of excavator in weed control effort in regeneration of degraded oriental beech regions under actual ecological conditions of research field has been found to be more productive from both of aspects of duration and costs. These determinations carried out should be repeated in weed control efforts in degraded forest fields with different ecological conditions, it is compulsory for finding the most efficient weed control method. These findings will light the way of technical staff of forestry directorate in determination of the most effective and economic weed contol method. Thus, the more actual data will be used while preparing the weed control budgets, and there will be significant contributions to national economy. Also the results of this and similar studies are very important for developing the policies for our forestry in short and long term.

Keywords : artificial regeneration, weed control, oriental beech, productivity, mechanization, man power, cost analysis
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