Contents and Abstracts of the Bulletin of Forest Science

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Abstract – Earlier cultivation and tillage tools were designed on the basis of practical experience; testing and records of fundamental theoretical analysis of these tools is largely lacking. Today, the release of new equipment is always preceded by several years of laboratory tests and field experiments. By modelling the interaction between the soil and tillage tools, the time and costs of the development process can be significantly decreased. Thanks to the recent rapid advancement of high performance computers and numerical methods, it is possible to complete these model calculations more effectively now. With the help of a combined FEM/SPH simulation – in this case utilizing two different driving speeds of a tractor – we determined the magnitude of horizontal force acting upon the rotating tool as a function of time. Using the functions fitted to the simulation results, the authors have calculated the average and the maximum values of the horizontal force. Moreover, normal stress distribution in the soil has also been determined.

Abstract – The „Simplified grading selection method" (Szász és Burján 1975) developed decades ago by the Forest Research Institute (FRI) and founded upon an earlier range of selection methods and evaluations of the diameter at breast height for logging became obsolete and necessitated updating and modernization. This was adjusted to the prevailing current logging data in order to make valuable original data useful and useable for the design and evaluation of current logging practices. We developed a simple solution for this: the so-called two-step proportioning method. However, the use of FRI tables requires the need to know the quality of tree stands as well. For this purpose, we utilized the trunk rating system in the Forest Planning Guide, making some adjustments to suit the task at hand. The resulting selection structure multiplied by current average prices determined average revenue. Our

method proved suitable for different levels of aggregation including national, forest company, and forest subcompartment levels. The process can be considered as a „sales-centric quality classification" of stands. To calculate the overhead cost of logging operations, we utilized the suitable portion of the developed cutting organizational plan (Szasz, 1979), and named the modified version the "Sopron series analysis method".

Ferenc FACSKÓ

The transparency of forestry companies in 2014 … 43-53

Abstract – The following report summarizes the results of a study which examined the level of transparency among state-owned forestry companies. Overall, it was discovered that value of forestry companies are around country average. The information content of forest company websites can be assigned to two categories: a wealth of information or very little information. It can be said that companies that do not meet their legal requirements are also more likely to provide little information or information of poor quality on their websites.

István BACH, Norbert FRANK, Beáta PINTÉR and Sándor BORDÁCS

Changes in the production of reproductive material in forest management from the years 1982-2014 (Quo vadis forest reproductive material production?) … 55-69

Abstract – Over the past decades, the forest reproductive material sector has changed significantly in Hungary. Societal, economic, and political developments have decisively influenced forest management, the results of which are reflected in the statistical indicators of the production of forest reproductive material. Analyses of statistical data point out relevant trends and changes, especially in ownership structure, total number of nurseries, mean size of nursery area, and proportion of tree species produced. In the early 1990s the formerly dominant state-owned nurseries were replaced by privately-owned ones, and large or medium size nurseries were replaced by small or even micro size farms. Simultaneously, the mean area of nurseries decreased drastically for about 10 years. As a consequence of slight reduction in total number of nurseries, the mean area, as well as the total volume of reproductive material produced by each nursery, has increased slightly since the 1990s. In general, relevant modifications in forestry policy, such as the increasing importance of close-to-nature forestry, modified preferences in the use of non-autochthonous tree species, and essential changes in afforestation programs have significantly affected the production structure of the forest nursery sector as well. For example, the production volume of reproductive material of conifers is far less than it was in the 1990s, but the production volume of scattered broadleaves is far greater than it was in the 1990s. Further variations in the structure of tree species can be expected due to the varying needs of climate change.

Bence BÁRDOS, László NAHÓCZKI, Dénes MOLNÁR, Norbert FRANK, Zoltán KÖVESKUTI and Ádám FOLCZ

Investigation of epicormic shoot growth of sessile oak in shelterwood cutting stands … 71-83

Abstract – This paper addresses the epicormic shoot growth of sessile oak (*Quercus petraea*) in natural regeneration stands which can have a strong effect on potential trunk quality at harvesting; the deterioration of trunk quality can cause significant economic losses for forest managers. During the course of our research, we investigated the epicormic shoot growth of sessile oaks in shelterwood cuttings in different ecological environments. We examined 487 specimens on 10 plots in 3 different Hungarian regions. The collected data were analyzed in relation to site conditions and silvicultural interventions. Our results show that epicormic shoot growth intensity is influenced by crown size and changes in environmental parameters.

Accordingly, it is recommendable to make more intensive cuttings in young stands in order to stimulate trees to grow larger crowns. Faster and more careful final cuts are also suggested. By using these principles, trunk quality deterioration caused by epicormic shoot growth can be mitigated.

Árpád SZALACSI, Szilvia VERES and Gergely KIRÁLY

Gap cutting and its effects on the understory vegetation in the pedunculate oak-hornbeam forests of Szatmár-Bereg Plain (NE Hungary) … 85-99

Abstract – Lowland oak-hornbeam forests are one of the important sites of quality oak wood production. Consequently, this habitat has become a major conflict point between forest management and nature conservation in Hungary over the past 20 years. In order to develop a regeneration method based on natural processes, we tested the impacts of gap regeneration cuttings in three compartments in the Szatmár-Bereg Plain (NE Hungary). During the regeneration process, we found an insignificant number of invasive weeds in the gaps. Forest herbs were represented nearly uniformly in the gap parts variably exposed to the sun; the cover of native weed species was significantly higher in the central part of the gaps. Mixed tree species (especially hornbeam) have shown great vitality in the gaps. Thus, in order to ensure the natural regeneration of the pedunculate oak, protection against game damage and proper management are indispensable. Based on our observations, a recommended minimal starting gap size in lowland hornbeam-oak forests is 0.15 hectares. After they are created, further expansion of the gaps is necessary after 4-5 years. The final restoration subdivision (approx. 2 ha) can be reached in 2 steps within a span of 8-10 years. The forests created in this way are mixed and are of an appropriate vertical and horizontal structure.

Tivadar BALTAZÁR, Ildikó VARGA and Miloš PEJCHAL

The impact of the European mistletoe (Viscum album L.) on woody host-plants: a study of the relationship between infection intensity and tree vitality … 101-118

Abstract – Our research aims were to examine the relationship between infection intensity of European mistletoe (*Viscum album*) and the physiological and biomechanical vitality of the potential host species. For this study 3039 individuals of nine host species (*Acer campestre*, *A. platanoides*, *A. pseudoplatanus*, *Crataegus monogyna*, *C. pedicellata*, *Juglans nigra*, *Robinia pseudoacacia*, *Tilia cordata* and T. *platyphyllos*) were examined; of these 1424 specimens were infected. The host trees are situated in the Castle Park in Lednice, Czech Republic. Based on our results, it can be concluded that there is a strong relationship between these three factors. The weakest relationship was observed in the case of field maple (12-17%) and the strongest relationship was in the case of the black walnut (32-39%). In spite of our findings, the exact role of tree vitality influencing mistletoe infection remains unclear.

Szabolcs SZANYI, Levente SZŐCS and Zoltán VARGA

The zoogeographical and ecological characteristics of Macroheterocera fauna of the Bockerek forest reserve … 119-128

Abstract – The Bereg Lowland is the most humid and coolest part of the Great Hungarian Plain, and is also the richest in natural or close-to-natural forests. Among them, the Bockerek forest (between Tákos and Vámosatya) is one of the most important. It is a nature conservation area and a large portion is a forest reserve. Its condition needs to be continually monitored; thus, the Forestry Research Institute has been monitoring the forest with light traps for a considerable time. From this material we analysed the faunal list of the nocturnal macro-moths. Since we only used a taxonomic list of species from a 9-year period without

frequency data, we only surveyed the composition according to faunal types and ecological faunal components with special regard to significant pest species in forestry.

József VARJU and Ferenc JÁNOSKA

Woody nutrient preferences and habitat use of the Eurasian beaver (Castor fiber Linnaeus, 1758) at the Moson Danube … 129-144

Abstract – Beavers (*Castor fiber*) inhabiting the Moson Danube region presently cause considerable damage to the forestry sector. In our study we discuss forest areas affected by the activities of the beavers. We marked out plots in economically significant forest cultures in riverside sectors inhabited by beavers along the Moson-Danube where we studied the beavers' nutrient preferences and habitat use based on the number and location of chewed trunks. We have identified positive preferences in the case of several tree and shrub species (*Corylus avellana*: 0.24 *Prunus padus*: 0.22 *Salix* sp.: 0.82) and we have determined the areas of these cultures that have been particularly affected. We found that 75% of the chewed trunks are within 10 metres of the riverbanks. As a result of our research, forests particularly sensitive to damage c