

SAPLING EXTRACTOR FOR MECHANIZED PLANTING

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Saplings

Plants grown by at least double transplanting, root cutting or transplanting into a packing, or a combination of these operations, with an above-ground part from 121 cm to 250 cm high and shaped crown. Artificial regeneration of forest stands is carried out on an area of approx. 20 thousand ha per year, in the Czech Republic. To ensure such tasks of artificial forest regeneration and afforestation, domestic forest nurseries ship to customers around 120-140 M pieces of planting material of forest trees.

The assertion of saplings from seedling forest in maturity age stands extends the spectrum of options for introducing deciduous trees into mountain conifer stands and enables a combination of planting material of normal and large dimensions, where the weaknesses of one technology are secured by another technology. Especially in extreme climatic and natural conditions, their usage can achieve significantly higher survival and thus lower losses during afforestation. Most of the thick skeletal roots should be formed by the sapling only after its planting in the forest stand, which the risk of root deformations is significantly reduces.

Technology of the seedling trees planting according to stages



Preparation of the hole for subsequent planting.

Transporting a bale of soil to fill the hole after the extracted sapling with the soil bale.

Approaching the sapling to be lifted from the ground, including the 80 x 60 cm bale.

The sapling transport and insertion the sapling with the soil bale into a pre-excavated hole.

The saplings survival without the need for weeding and fencing, which prevents peeling, browsing and fraying damage.



Operational tests within planting of sapling

Under optimal conditions, the performance is about 10 saplings per hour. The weight of the ball of soil with the sapling is 220 kg. With regard to the soil and the skeleton in it, the daily output is: 30 - 80 pcs per day.

Mechanization costs: tractor 17 €/h; machine operator 12 €/h; 2 auxiliary workers: navigation to the sapling and control of hydraulic shifts of the planter + compaction of the ball of soil with the sapling into the excavated hole 8 €/h.



Subsequent technical modifications of the extractor so that it could be fully controlled only by the tractor operator. The extractor is remotely controlled by the operator, the possibility of transverse movement so as not to damage the sapling.

*VLS Plumlov
The saplings of selected wood species planting on the clearing with the packing at forest nursery. Also planting from forest nursery to arboretum VLS Plumlov.*

Economic benefit when using presented technology

Complete elimination of the costs of mowing the weeds with the considered annual costs of mowing in the amount of 325 €/ha, the annual savings would amount to 73.000 €; Reduction of the costs of repeated reforestation with the considered annual costs of improvements in the amount of 650 €/ha, the annual savings would amount to 150.000 €. Shortening the time to reach a secured stands by an average of 2 years and thus reducing the costs of protection against game and pest, fence maintenance or repellent protection, with the considered annual costs of protection against game 365 €/ha, annual financial savings would be 166.000 €.



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