

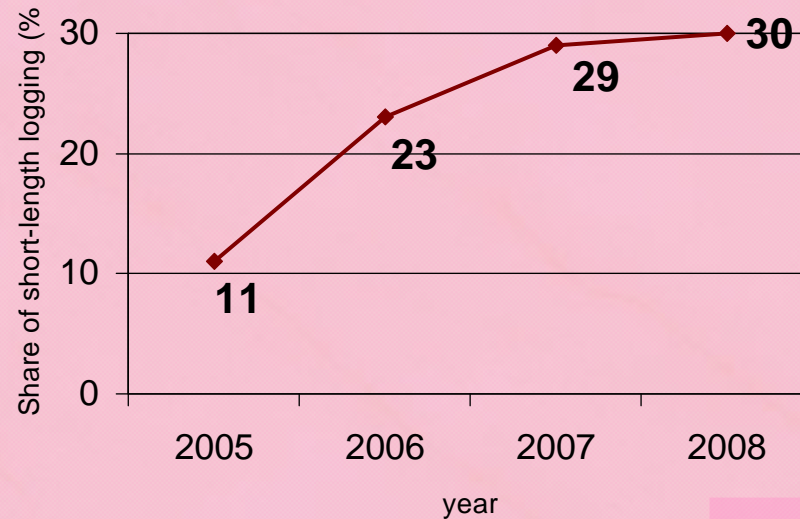
PERFORMANCE STANDARDS OF MEDIUM- AND HIGH- POWER FORWARDERS

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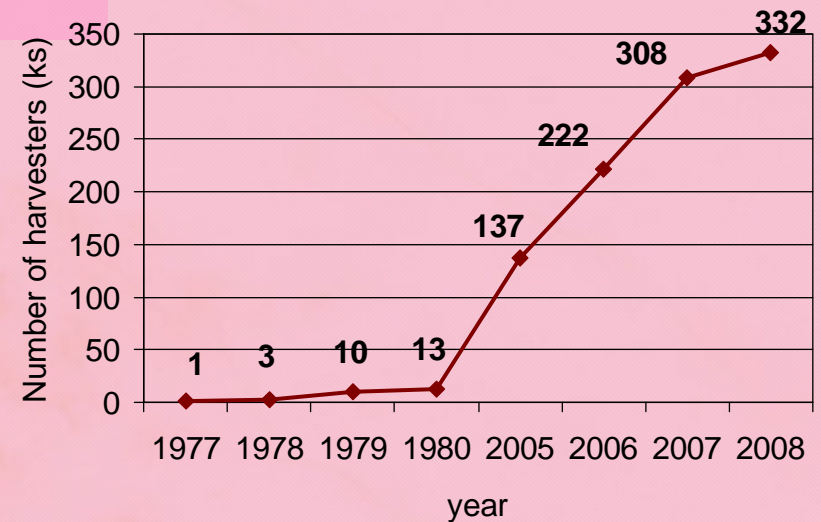
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Number of forwarders
app. **550** pcs.





The aim of researches

The aim of the paper was to draw up *performance standards* for medium and high-power forwarders of engine performance *over 60 kW*

Shift time

Operative time (forwarding)

time for driving the unloaded machine from the roadside to the extraction site (t'_{A126})

time for loading (t'_{A127})

time for driving the load from the extraction site to the roadside (t'_{A128})

time for unloading at the roadside (t'_{A129})

time for preparation and concluding of work T'_{B101}

time for technical servicing of the work place

T'_{B102}

time for work instructions

T'_{C103}

technical maintenance time

T'_{C104}

time for repairs

T'_{C105}

time for biological and legally required breaks

T'_2

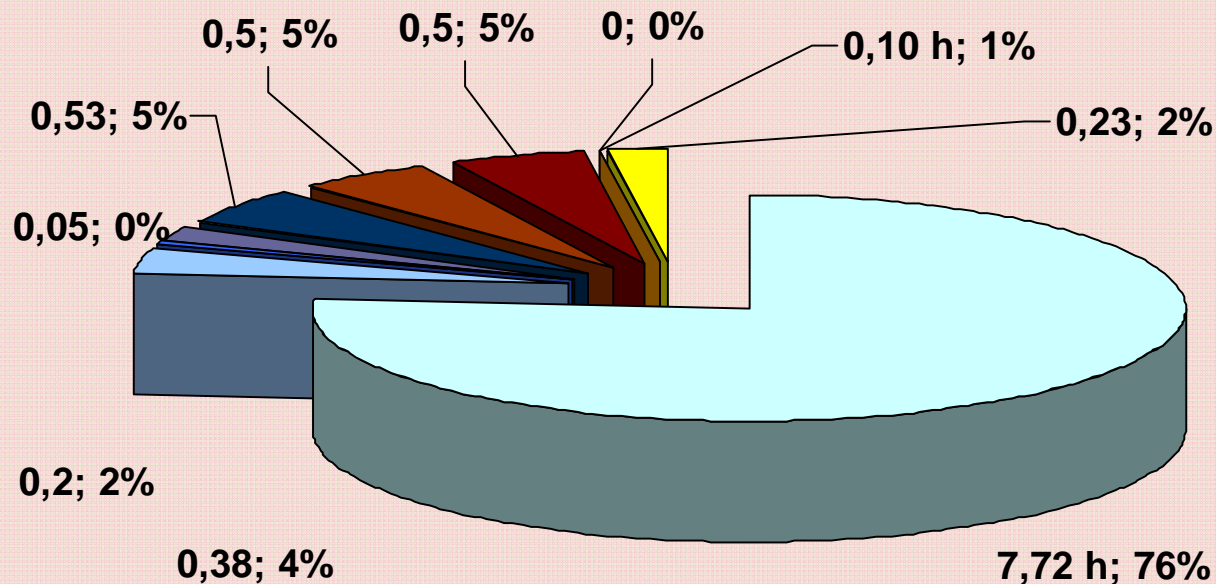
technical-organizational losses

T'_E

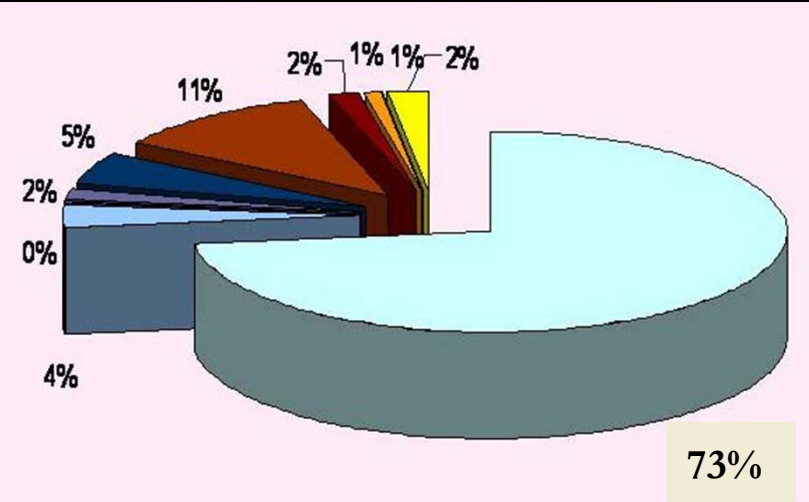
personal time losses

T'_D

Normal time consumption



- operative work (logging)
- preparation and concluding of work
- work instructions
- technical servicing of the work place
- maintenance
- repairs
- biological and legally required
- losses due to technical and organizational problems
- other time losses
- other work times



Real time consumption

Performance standards

Work field: Harvesting		Means of work: Forwarders of performance class <i>over 60 kW</i>			
Type of work: Timber forwarding					
Number of workers: 1					
Tree species:		Coniferous and deciduous– fresh and dry			
Forwarded timber:		Assortments 2 – 6 m			
Type of felling:		Advance			
		Principal			
Mean-tree volume (m³)		0.20 – 0.29	0.30 – 0.49	0.50 – 0.69	0.70 – 1.00
Forwarding distance (m)	Number of standard	4	5	6	7
		Time consumption (Nh/m³)			
up to 100	5001	0.08	0.07	0.06	0.06
100 – 200	5002	0.08	0.08	0.07	0.06
201 – 300	5003	0.09	0.08	0.08	0.07
301 – 400	5004	0.10	0.09	0.08	0.07
401 – 500	5005	0.10	0.10	0.09	0.08
501 – 600	5006	0.11	0.10	0.09	0.08
601 – 700	5007	0.11	0.11	0.10	0.09
701 – 800	5008	0.12	0.11	0.10	0.09
801 – 900	5009	0.12	0.12	0.11	0.10
901 – 1000	5010	0.13	0.12	0.12	0.11
for further 100 m	5011	0.005	0.005	0.005	0.005

Average load size – N = 10.1 m³

CONCLUSION



$$t_{A1} = 47,4164 - 21,5832 \cdot h + 0,0381605 \cdot L$$

$$t_C = 56,426 - 25,684 \cdot h + 0,038 \cdot L \quad (\text{min/load})$$

$$p = < 0.001, I = 0.65, R^2 = 0.42$$

- ❖ *The consumption of operation time: 76 %*
- ❖ *Time consumption: 0.06 – 0.13 Nh/m³*
- ❖ *Performance of forwarders: 7.7 – 16.7 m³/Nh*



**Thank
you for
attention**

