
Accuracy of timber volume measurements using a harvester and a photo-optical system in post-windthrow stands

Piotr S. Mederski¹, Mariusz Bembenek¹, Zbigniew Karaszewski², Mariusz Brunka¹

¹Poznań University of Life Sciences, POLAND

²Wood Technology Institute, POLAND

FEC 2018

Rotorua, New Zealand

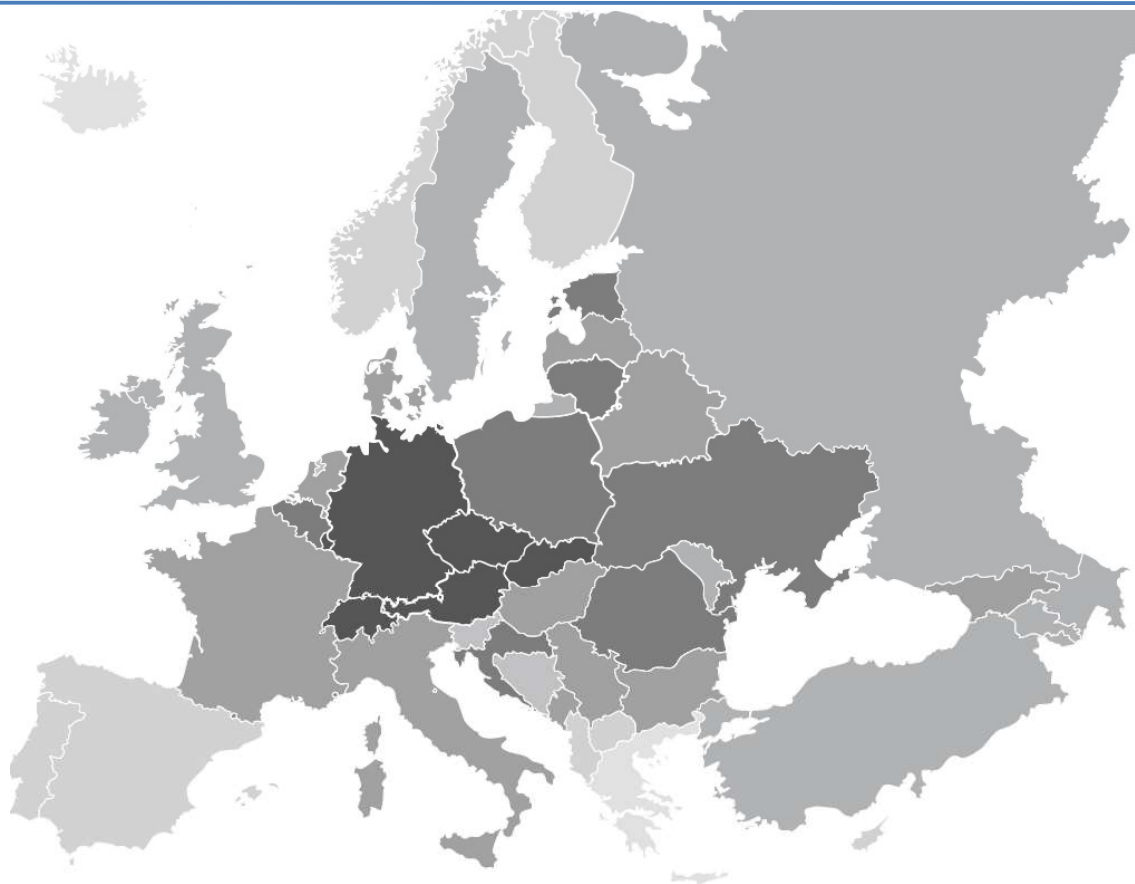
16-19 April 2018



Poznań University of Life Sciences

presenting:
Dr. hab. Piotr S. Mederski

16/05/2021



Value of furniture export:
4th in the World!

275 m³/ha SF/58 y.o.
80% State Forests
60% Scots pine

STANDING VOLUME in selected countries (SoEF 2011)

STANDING VOLUME (m³/ha):

251-346

101-150

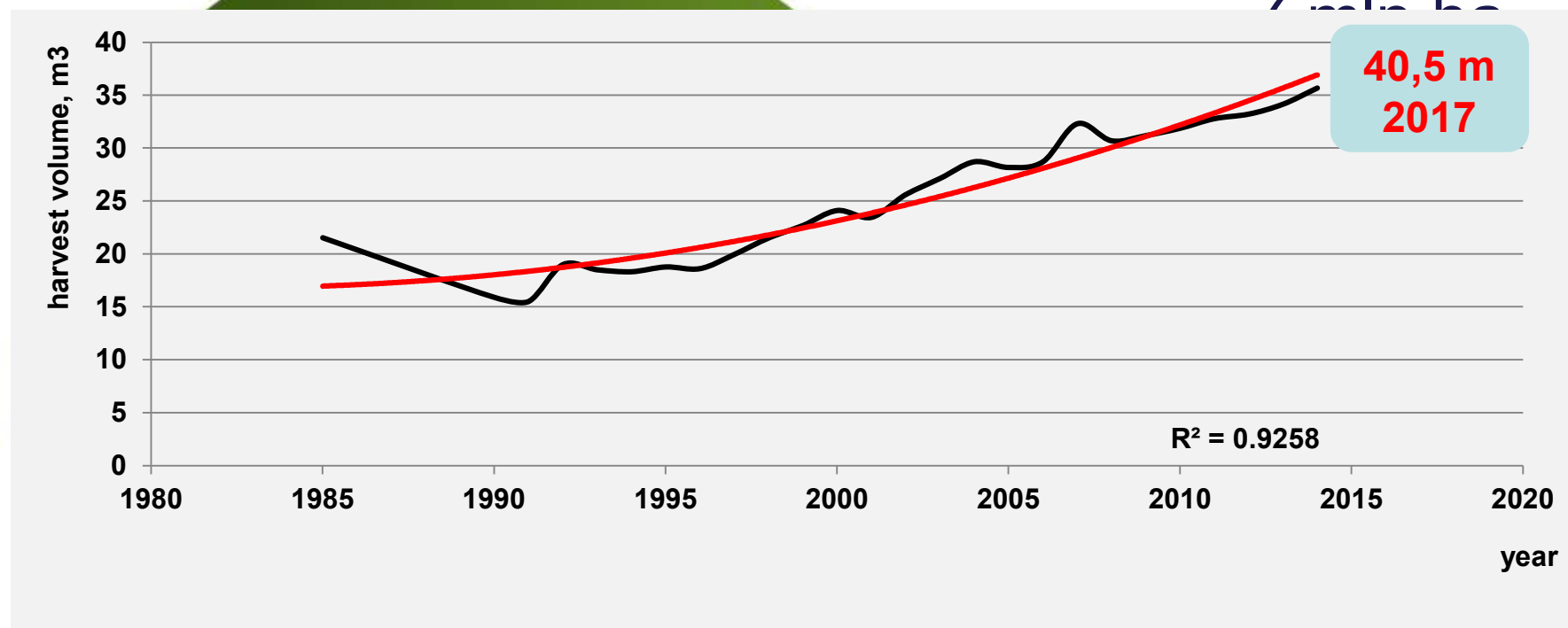
201-250

51-100

151-200

0-50

2/15



in 2050

forest cover
in Poland

August 2017, windthrow 10 mil m³, 40 000 ha,
the problem is timber scaling



4/15

August 2017, windthrow 10 mil m³, 40 000 ha,
the problem is timber scaling



August 2017, windthrow 10 mil m³, 40 000 ha,
the problem is timber scaling



August 2017, windthrow 10 mil m³, 40 000 ha,
the problem is timber scaling



...and more

16/05/2021

August 2017, windthrow 10 mil m³, 40 000 ha,
the problem is timber scaling



8/15

Let's measure it, how much we loose due to windthrow?

harvester measurements for small compartments – yes
sScale by Dralle for large timber piles? – pilot study
timber losses in post-wibdthrow stands?

16/05/2021

???



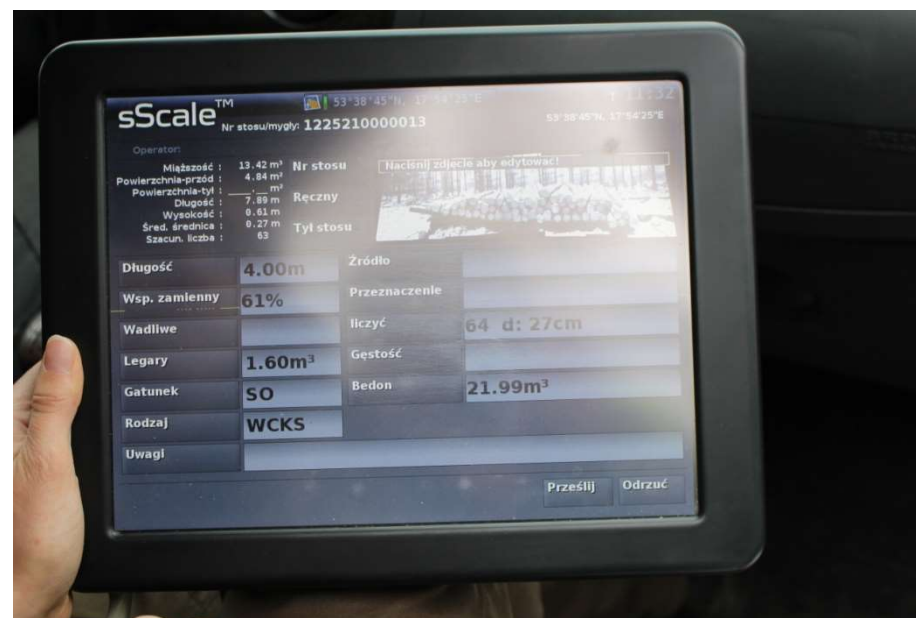
9/15

3 measurements of the same pile



accurate results: **+2/-2%**

scaling	V, m3	dif. from mean	%
s1	13,42	0,24	1,80
s2	13,18	0,00	-0,03
s3	12,95	-0,23	-1,77
mean	13,18		



Why timber lose?



plot 1 – harvester cut ca 1 -2 m above root neck



plot 2 – chainsaw cut just above root neck

16/05/2021



plot 3 – harvester as usual

12/15

How much lost?

16/05/2021

	plot 1		plot 2		plot 3	
	m3 OB.	m3 UB	m3 OB.	m3 UB	m3 OB.	m3 UB
L 5 m	3,10	2,82	2,60	2,24	9,69	8,23
L 4 m	20,95	18,48	28,56	24,90	38,88	33,99
L 1.8 m	9,00	8,28	10,22	9,27	13,01	11,75
PULP 2.5 m	25,45	24,82	19,51	19,01	15,95	15,57
total	58,50	54,40	60,89	55,42	77,53	69,54
loss		-22%		-20%		100%

13/15

Conclusions

sScale solution is recommended for large piles of timber, give satisfactory repetitive results $\pm 2\%$

timber losses in post-windthrow stands can reach 20-22%

Thx

16/05/2021

tēnā koutou
thank you!

piotr.mederski@up.poznan.pl

Poznań University of Life Sciences (PULS)
Poznań
Poland

15/15



PULS

presenting:
Dr. hab. Piotr S. Mederski