Sveriges lantbruksuniversitet
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Forwarding on soft soils, comparison of rutting with and without wooden bridge sections

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Machines can be equipped with tracks, but sometimes this is not enough

An old method is to “build roads with logs”, here a picture from Finland when making a road on peat-land during World-war II.

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Covering those logs with soil almost make a permanent road

In Swedish forestry today, it quit often looks like this after a harvest operation “on wrong side of a weak spot”. Pulp-wood or energy wood logs was used, making it possible to pass without sever soil damages

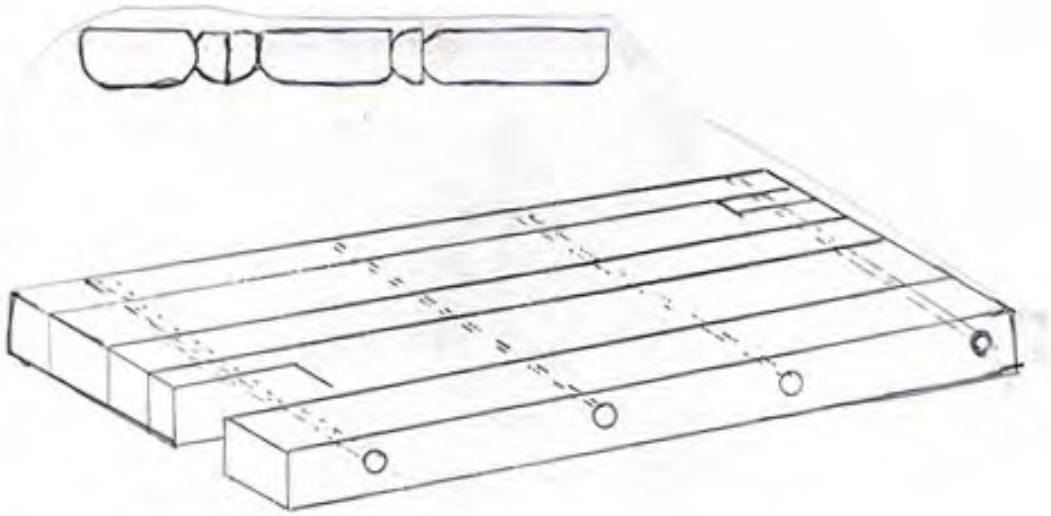
This way of reinforcing the forest ground is often used.

However, it also creates losses of wood volumes, even if the logs rather often might be used for low payed energy assortments

Photo Elisabeth Andersson

Another option is to use “portable wooden sections” purpose built to drive on.

Photo Anja Lohmander



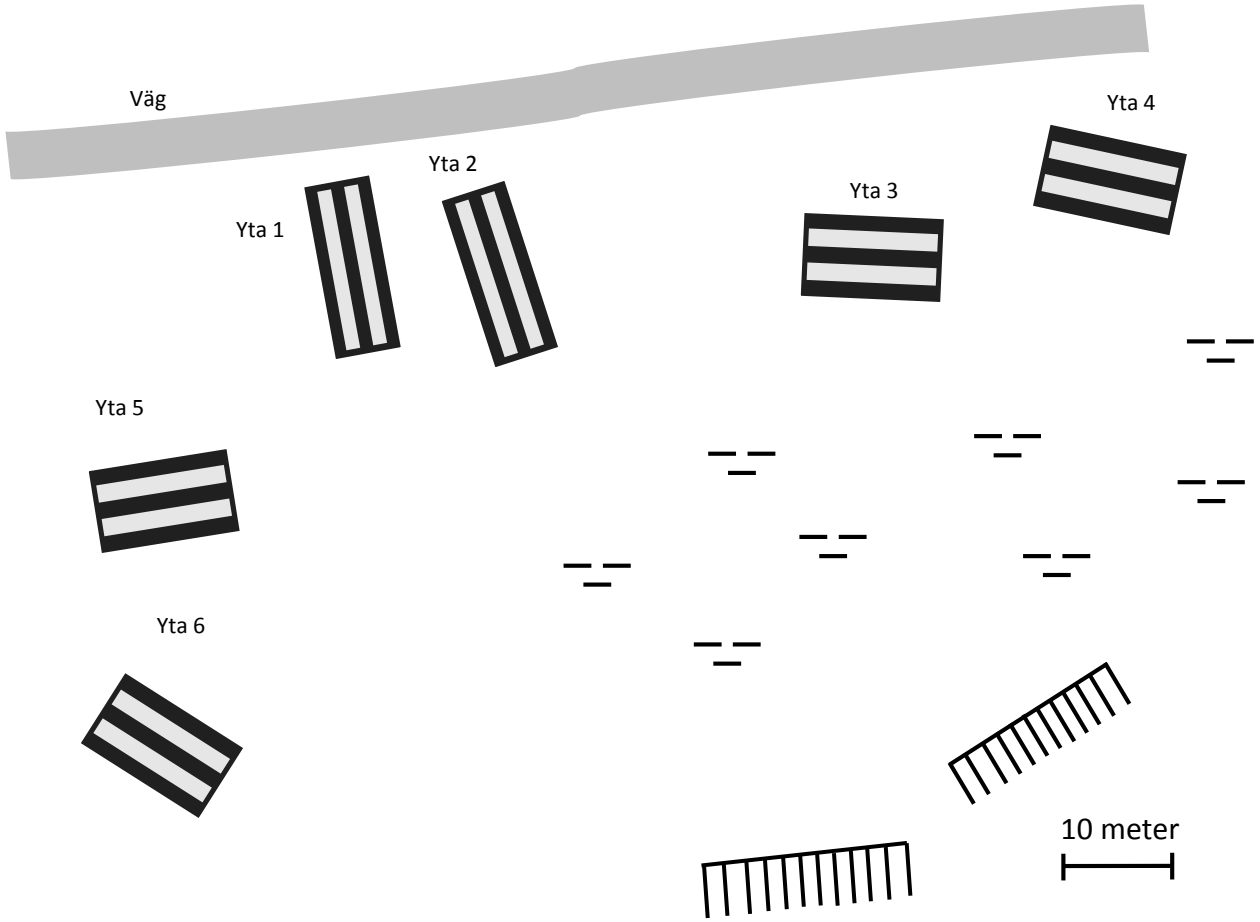
They can be used as a bridge over small creaks, but also just directly on the ground on weak spots. They are put in position with a forwarder.

The objective of this study was to document rut depths and soil compaction when using “portable wooden sections” in comparison with driving directly on the ground.

As far as we know, no real studies about this has been performed before

A standard John Deere 1110 D loaded forwarder was used. The total weight was 28.5 tonnes including tracks on the rear bogie

Materials and Methods


Väg
Yta 1
Yta 2
Yta 3
Yta 4
Yta 5
Yta 6
10 meter

Soil compaction measurements

A Con-penetrometer was used

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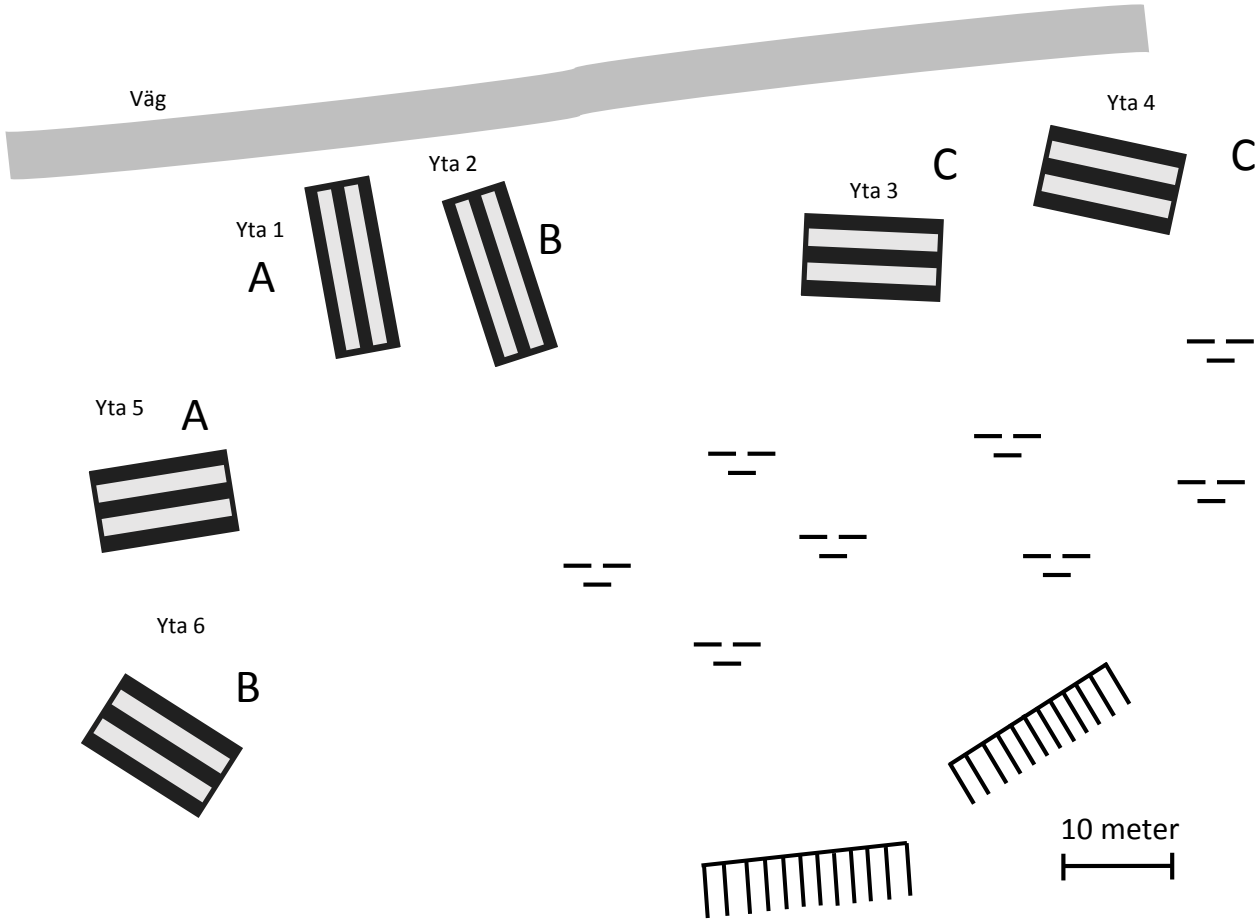
Before trials:

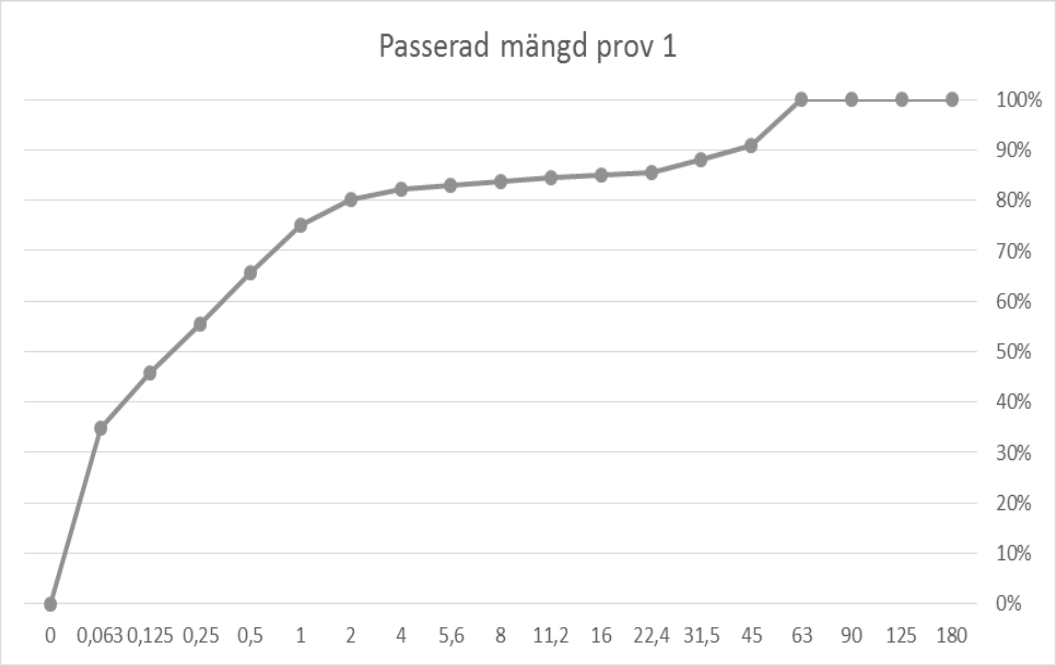
Con-index

1.6 – 2.5 MPa

Three pairs of comparisons



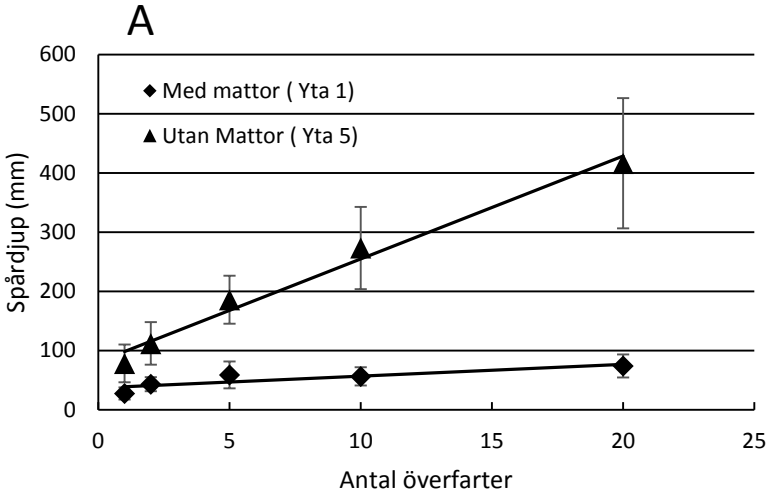
A very fine textured moraine soil

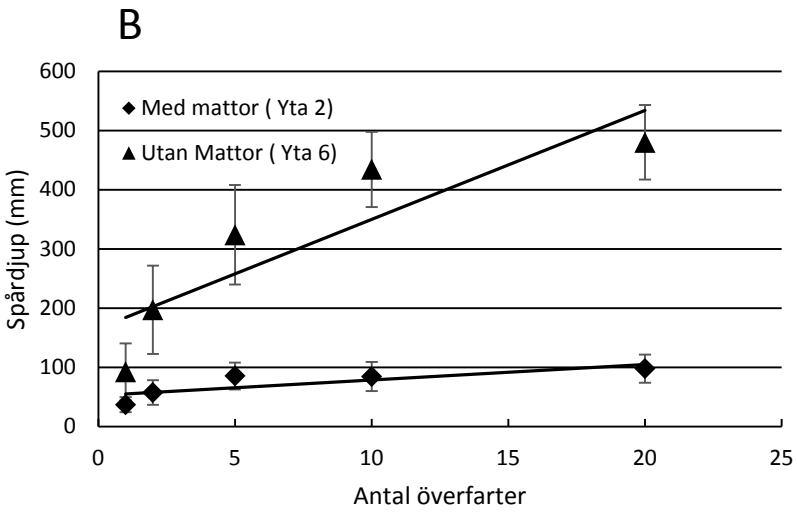


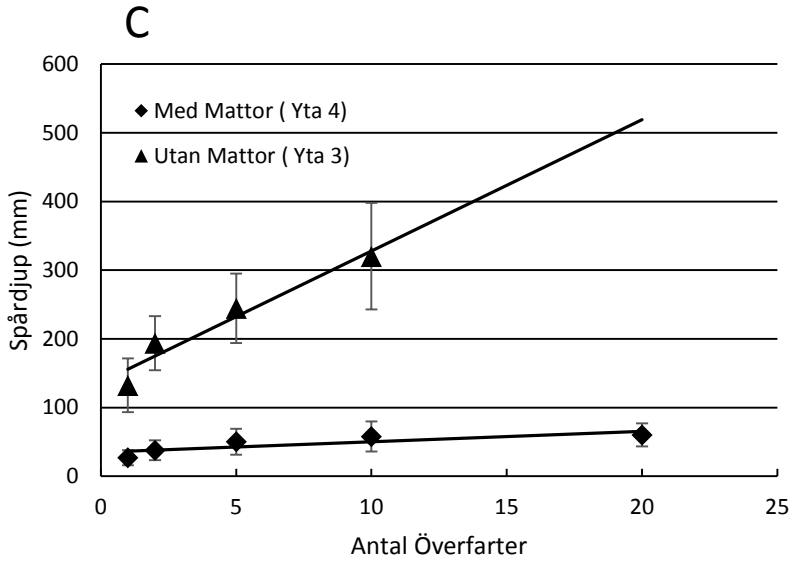
Rut depth measurements

Results

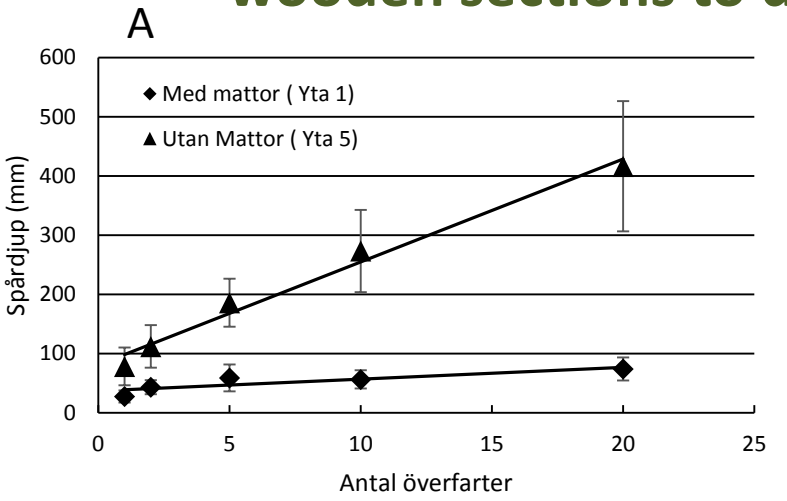
All three comparisons gave the same result

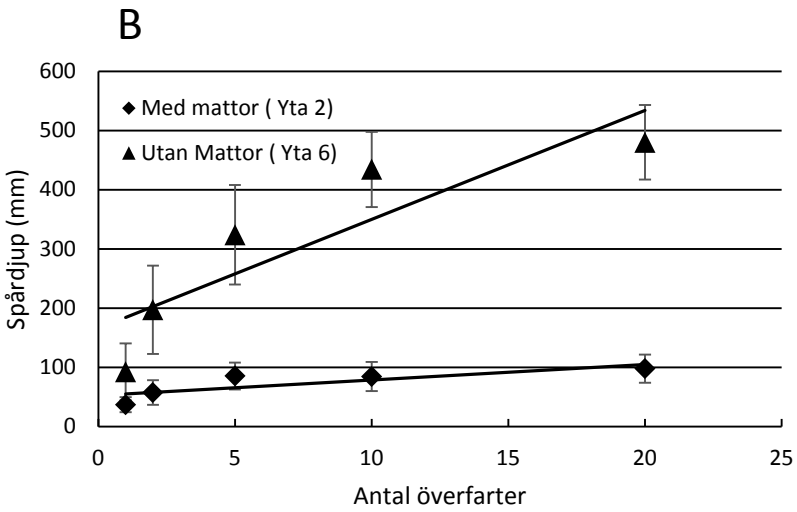


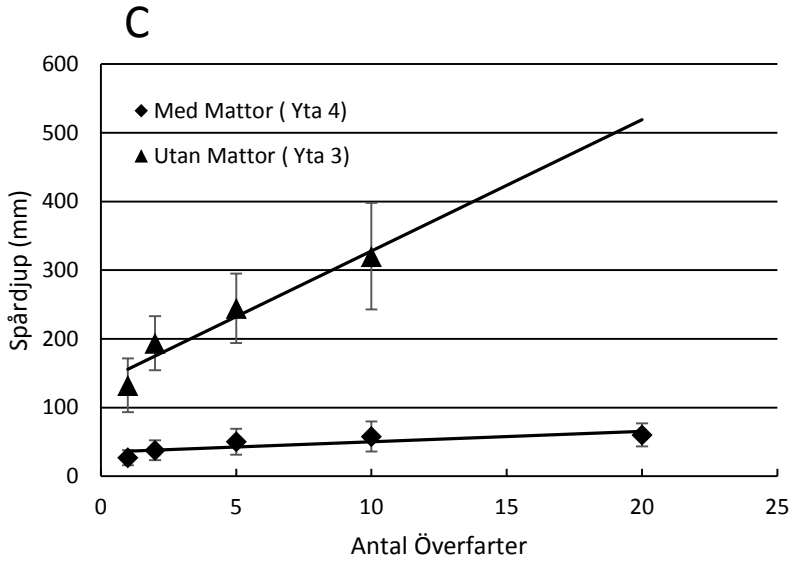




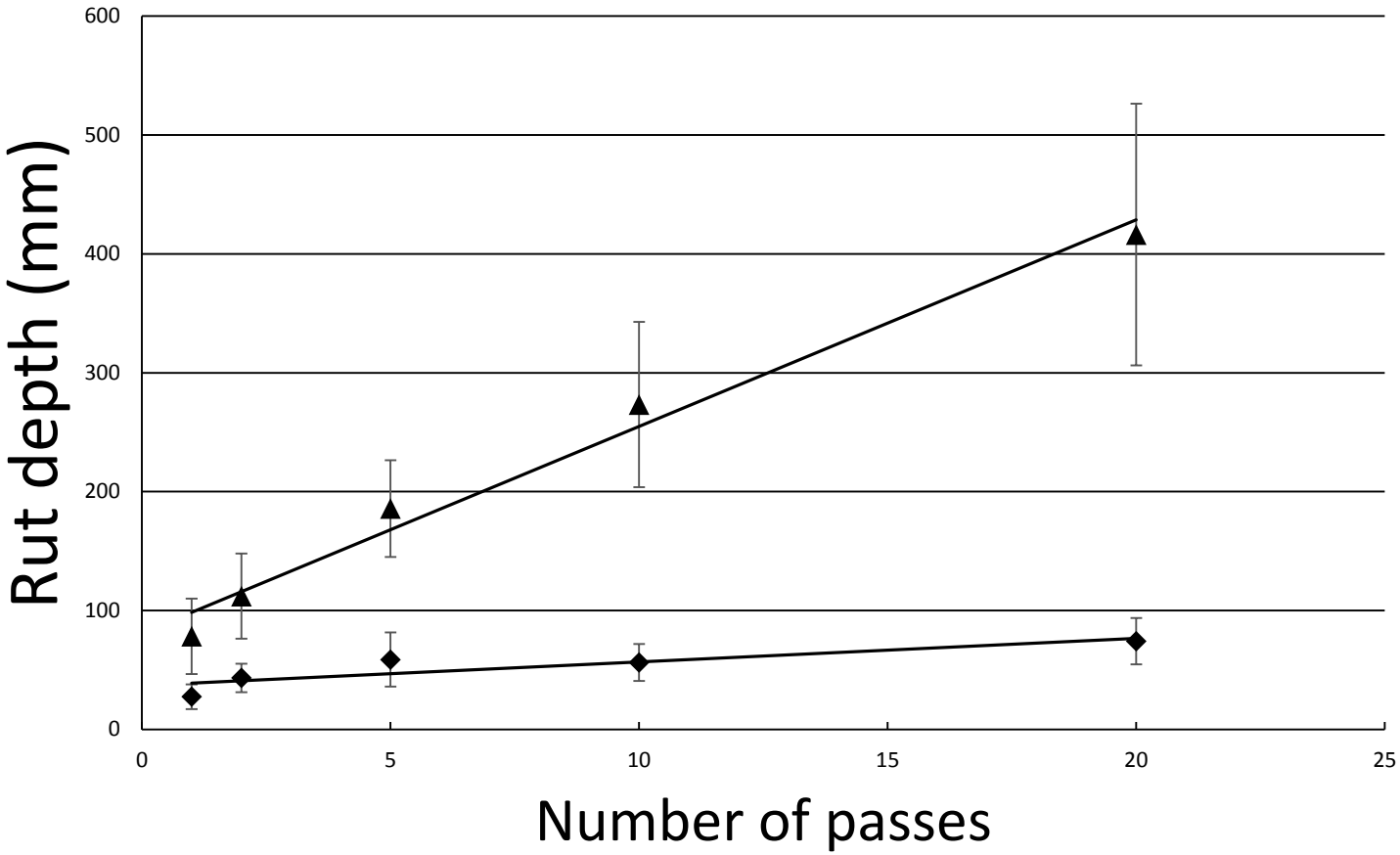
All three comparisons gave the same result
The rut depths were 4-5 times larger when not using wooden sections to drive on





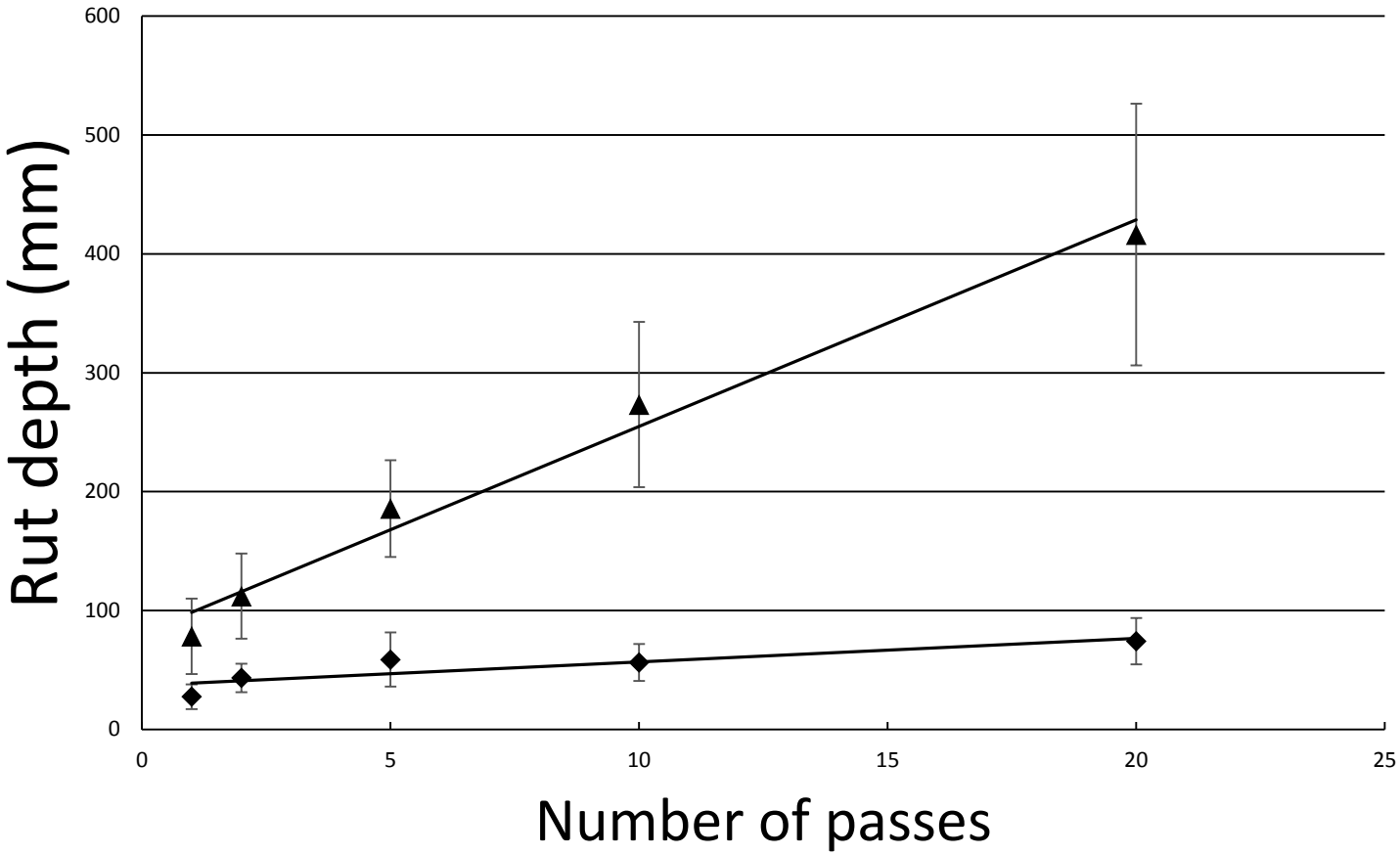


One of the comparisons more in detail



One of the comparisons more in detail

Already after one machine passing the rut depths significantly differed



One of the comparisons more in detail

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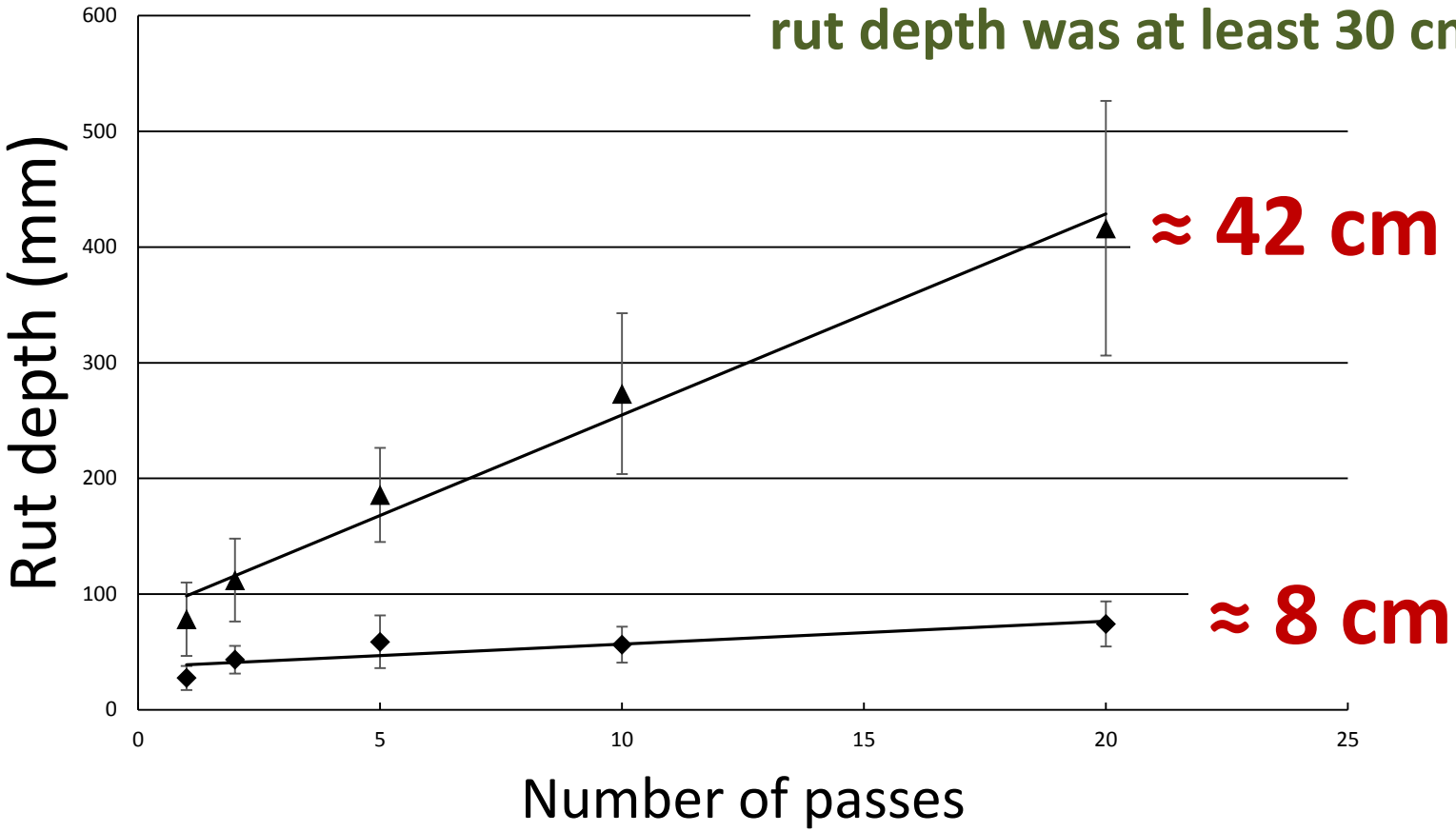
After 20 passes, the difference in rut depth was at least 30 cm



The soil compaction then

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Without wooden sections the Con-index increased by **23-58%** and this was significant for all comparisons

Conclusions

Wooden bridge sections do help to prevent sever soil damages, and should be considered in the ordinary planning of many harvest operations. They can be produced and used in all countries, so no excuse for not using them!

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The End

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