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Study report

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Tutkimusselostus

**PRELIMINARY SURVEY OF THE BACK
COMPLAINTS OF MEN WHO HAVE DRIVEN
TRACTORS IN FOREST WORK**

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SUOMENKIELINEN TIIVISTELMÄ:
ALUSTAVA KARTOITUS METSÄTÖISSÄ TRAKTORIA KULJETTANEIDEN HENKILÖIDEN
SELKÄSAIRAUKSISTA

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SUMMARY

In 1972, 4 000 questionnaires concerning back complaints were mailed to forest tractor drivers in different parts of Finland; 800 of them were answered. A total of 23 % of the drivers reported that their back was well and 77 % reported that it was sore. Sixty-nine per cent of the drivers with a sore back stated that the pain was slight, 29 % said that it was rather severe or severe and 2 % could not drive a tractor because of the pain. In all 22 % of the drivers had consulted a doctor on account of back trouble. Of those who had driven tractors for less than two years, 6 % had consulted a doctor, of those who had driven for 5.1...10 years, 25 %, and of those who had driven over 15 years, 33 %. Five drivers had been compelled to leave their job at the advice of a doctor. Tractor drivers should be given instructions on how to take care of their backs so that complaints could be prevented. Drivers' health should be examined at regular intervals and tractors should be designed so as to minimize these complaints. Even the best forest tractor seats are not yet sufficiently good.

TIIIVISTELMÄ

Metsätraktorin kuljettajien selkäsairauksia koskevia kyselylomakkeita jaettiin postitse eri puolille Suomea vuonna 1972 kaikkiaan 4 000. Vastauksia saatiin 800. Vastausten mukaan selkä oli terve 23 %:lla ja kipeä 77 %:lla kuljettajista. Kipeäselkäisten kuljettajien selkävun laatu oli 69 %:lla lievä ja 29 %:lla keskinkertaisen voimakas tai voimakas. Kaksi prosenttia kuljettajista ei voinut ajaa traktoria selkävun vuoksi. Kaikkiaan 22 % kuljettajista oli käynyt lääkärissä selkävaivojen vuoksi. Vähemmän kuin 2 vuotta traktoria ajaneista oli käynyt lääkärissä 6 %, 5.1...10 vuotta ajaneista 25 % ja yli 15 vuotta ajaneista 33 %. Viisi kuljettajaa oli joutunut jättämään ammatinsa selkäsairauden vuoksi.

Traktorin kuljettajien pitäisi saada selän hoito-ohjeita selkäsairauksien ennalta ehkäisemiseksi. Kuljettajien terveys olisi tutkittava jatkuvasti säännöllisin aikavälein. Traktorin rakenne on pyrittävä tekemään sellaiseksi, että selkäsairauksien syntyminen vähenee. Metsätraktoreiden istuimet, parhaatkaan, eivät ole vielä riittävän hyviä.

Foreword

The mechanization of tree harvesting has been going on in Finland for slightly over 20 years. Initially, agricultural tractors were the machines used in the forest transportation of timber. The first actual forest tractors came at the beginning of the 1960's. In 1973, there were approximately 1 500 agricultural tractors with forest equipment operating throughout the year. The number of actual forest tractors was about 1 700. Almost all of them were forwarders. In addition, there were 35 tree harvesters.

By necessity, all effort has been put into making tractors durable and reliable in forest conditions. Sufficient attention has not been paid to operator comfort. In recent years it has been observed that forest tractors have become durable enough, but, instead, drivers' health has shown signs of weakening. We have reached a stage where it has become necessary to pay attention to operators' health.

This study, a preliminary survey of the back pains of men who have driven tractors in forest work, had its origin in drivers' complaints.

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1. Material and methods

The questionnaire study was carried out in 1972. It was limited only to the members of the Forest Machine Contractors' Union since almost all year-round tractor drivers in timber transportation are members of this union. A total of 4 000 questionnaires were distributed to different parts of the country. The questions asked were the following:

1. How many years have you driven
 - an agricultural tractor
 - a skidding tractor
 - a forwarder
 - or operated
 - a tractor digger
 - a debarking machinein forest work?
2. Do you consider your back to be completely well?
3. Do you feel slight pain in your back?
4. Do you feel rather severe pain in your back?
5. Do you feel severe pain in your back?
6. Are you unable to drive a tractor at all because of the pain?
7. Have you consulted a doctor on account of the pain?
8. What does the doctor's certificate say?
9. Other things related to this matter
10. The make and type of the present tractor
11. Your age, name and address

At this stage it was impossible to restrict the inquiry only to the drivers of a special type of tractor, because most of the present drivers have driven several types of tractors used in tree harvesting over the last 15 to 22 years. A total of 800 replies were received. At the time when the material was analyzed, the number of replies was 743.

The drivers were divided into five groups according to the number of driving years. These groups are shown below.

Driving years	Number of drivers	Average age of drivers in years
1. < 2	36	25
2. 2...5	201	28
3. 5.1...10	343	31
4. 10.1...15	114	35
5. > 15	49	40
Total	743	

2. Results

The largest number of replies (343) was received from the group who had driven 5.1...10 years. According to their own opinion, 23 % had healthy backs and 77 % sore backs. Among those who suffered from complaints, 69 % considered them to be slight, 29 % rather severe or severe and 2 % could not drive a tractor at all because of the complaints. Twenty-two per cent of the drivers had consulted a doctor (table 1).

As the number of driving years increases, the back complaints tend to become more severe, and an increasing number of drivers are compelled to consult a doctor.

On the basis of doctor's certificates, the following back complaints were reported to be common: wearing of cervical, lumbar, sacral and caudal vertebrae, lumbar spine bent, intervertebral discs worn, prolapse of intervertebral disc, stiff joints, new growth between vertebrae, open vertebra, vertebrae pressing the nerves, muscular tension in the back and strained back muscles.

Other complaints shown in doctor's certificates were sciatica, rheumatism, ache in neck, shoulders, hands and finger joints, stomach

Table 1. The back complaints of tractor drivers in forest work

Driving years	Number of drivers	Healthy and sore backs					The severity and number of complaints				Those who have consulted a doctor	
		Healthy		Sore		Total %	Slight	Rather severe	Severe	Cannot drive	Number	%
		Number	%	Number	%							
< 2	36	18	50	18	50	100	15	3	—	—	2	6
2...5	201	58	29	143	71	100	116	16	7	4	26	13
5.1...10	343	63	19	280	81	100	184	63	27	6	86	25
10.1...15	114	20	18	94	82	100	65	17	11	1	30	26
> 15	49	10	20	39	80	100	17	11	10	1	16	33
Total	743	169	23	574	77	100	397	110	55	12	160	22

diseases, gastric ulcer, dislocated kidneys, headache, reduced hearing and so on.

There were also signs of mental strain, although this was not included in the questionnaire. The present driver generation may have accumulated considerable mental strain. The reasons could be that previously tractors were less durable and caused much trouble, financing problems, e.g. some tractors were purchased almost entirely on credit, difficulties in getting regular work for a big machine, poor planning of the sites and the poor design of machines with regard to operators' health.

Five drivers had been compelled to change their profession at the advice of a doctor.

Drivers wanted the following improvements to be made in tractors. The cab should be tighter and the controls more adequately located. It should be possible to keep the temperature of the cab comfortable in both summer and winter. Endeavors should be made to design the tractor so that strain on the back could be reduced. The whole seat should be improved so that it would remain in a fairly horizontal position at all angles of declivity during driving. The seats were considered to induce perspiration in summer and to be cold in winter.

3. Discussion

The purpose of this study was preliminarily to survey the back complaints of men who had driven tractors in forest work. Only 20 % of the people to whom the questionnaire was sent replied. This may be interpreted to mean that the most active drivers and those who suffered most from back complaints participated in the investigation. The study, however, established that tractor drivers do suffer from back complaints, and that this also applies to quite young men. For instance, in the group of drivers who had operated tractors for 5.1 . . . 10 years (343 drivers with an average age of 31 years), 32 % reported that they had felt rather severe or severe pain in their backs, 2 % were not able to drive a tractor at all and 25 % had consulted a doctor on account of back pain.

No doubt it is important to adopt preventive measures in order to avoid back complaints. Health education should be arranged for tractor drivers in the form of instructions in the care of the back and gymnastic programs. It is also important that the health of present tractor drivers be examined at regular intervals, attaching special importance to back complaints. It would be wise to examine the

health condition of individuals who want to become forest tractor drivers. Thus at least those who are born with a weak back could be directed to other professions.

Endeavors should be made to design tractors so as to reduce the generation of back complaints. Even the best forest tractor seats are not yet sufficiently good. The seat question has to be considered once more in its entirety.