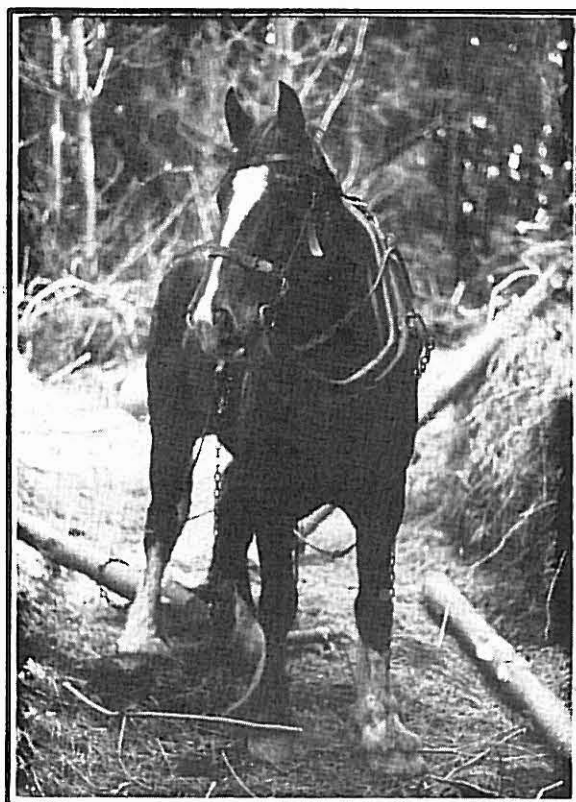


CLYDESDALE LOGGING

A Report by Chris L. Baigent, Logging Contractor, Nelson.



INTRODUCTION

The use of draught horses for smallwood harvesting, although considered by many to be a backward step in terms of technology, does provide a system suitable for both flat and steep terrain. Any method of smallwood logging must be cost effective. Draught horses are not the only solution to this problem but they do provide a reasonable alternative and can be used over a wide range of slope categories.

This technical release discusses the use of Clydesdale horses in the 0 to 30° slope category.

AN EFFECTIVE SYSTEM

Due to the limited pulling power, horses are best used for downhill extraction but can be used on flat terrain over short haul distances.

Considerable advantage can be gained by allocating one horse to one bushman. They become an effective team. Individual cutting areas should be established within shouting distance of another bushman. The horse can be tied up while the bushman fells and trims ten or twelve trees. The horse then extracts the logs to the roadside where

they are unhooked by the bushman. The logs can then be removed by a self-loading truck to the mill. The advantages of this system are :

- the bushman is kept busy all day and is not dependent on other parts of the system.
- the work is varied and therefore less tiring.
- there is satisfaction for the bushman in that he works out a particular patch of bush on his own to meet the forest owner's requirements.
- he develops an effective working relationship with his horse.
- the frequent rest periods available to the horse allow the team to work a full day.
- the horse can pull down hang-ups and so the risk of injury is minimised.

GENERAL COMMENTS

Reins should only be used when breaking a horse into bushwork which, depending on the horse, should only take a day or two. They should be removed at the earliest moment as they present a safety hazard. A horse will respond to voice command and this can be done from some distance.

Horsecare is important. A major factor is quality and quantity of feed. Hardfeed such as oaten chaff is preferable while lush green grass can cause the horse to sweat more and reduces horse stamina. Grass-fed horses are a lot more difficult to control as they always seem to be wandering off to the nearest patch of grass when they should be working. On a per Kg of feed value, it is better to get them full of hard feed than green grass.

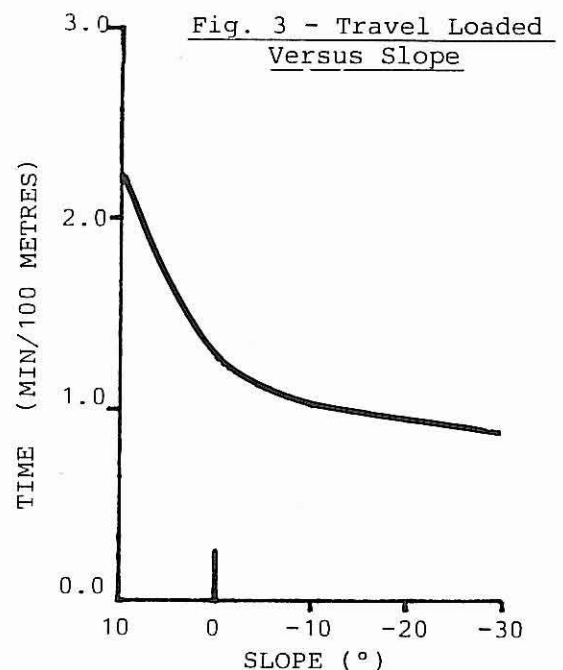
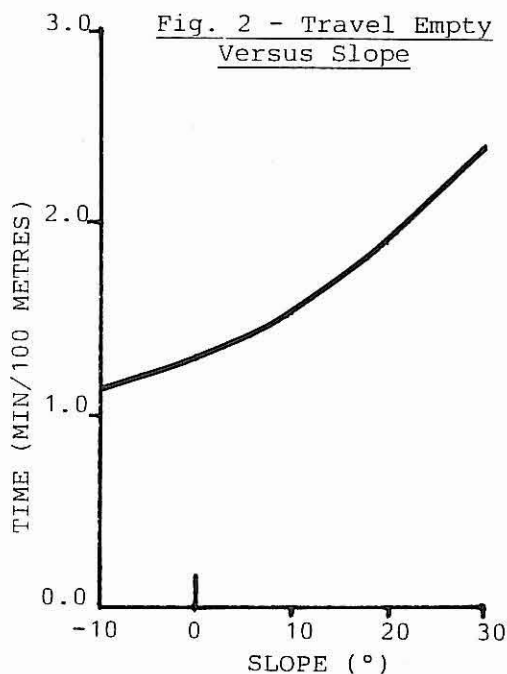
Shoes offer good protection. The hooves need to be trimmed every six to eight weeks. The wear on shoes is minimal and they can be reused up to six times before they need replacing. Grooming of the collar areas is necessary each morning. When a horse has been sweating hard, the dried sweat on a rubbing surface will cause irritation. Major injuries to horses in bushwork are rare. The horse soon learns what its capabilities are and what hurts. A horse with minor injuries can still work provided it receives due attention.

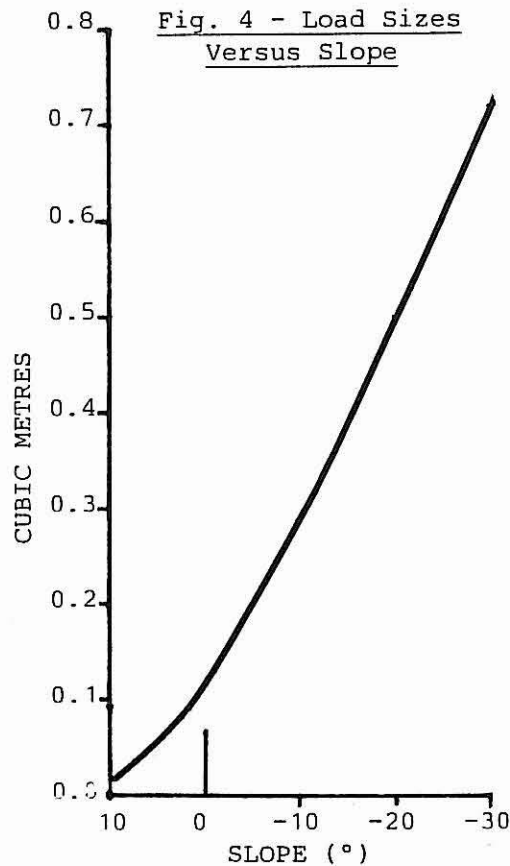
CYCLE TIMES

The haul cycle is broken into four elements :-

- (a) Walking into the bush (travel empty)
- (b) Breaking out the log
- (c) Walking out of the bush (travel loaded)
- (d) Unhooking

Elements (b) and (d) are easily defined and do not vary with length of haul, slope or haul size. Breaking out takes approximately 1.35 minutes and unhooking 0.74 minutes for one piece. Elements (a) and (c) are more variable depending on slope and haul distance. The graphs below illustrate the relationship between travel time and slope.





Figures 2 and 3 assume that the horse is pulling a reasonable load size. This is not a maximum but a load that can be handled throughout the day. Although a horse can pull a heavier log if required, over a day the load sizes will begin to average out to those illustrated in Fig. 4.

DAILY COST OF A HORSE

Consider a gelding costing \$1,200 with five years working life ahead of him.

			\$/day
Depreciation	-	$\frac{\$1,200}{5 \text{ years} \times 235 \text{ days}}$	1.02
Feed	-	Chaff $\frac{1}{2}$ bag/week @ \$12/bag	1.20
		Hay $\frac{1}{2}$ bale/day over winter months @ \$4 bale	1.00
		Land lease @ \$60/year	.26
			<hr/> 2.46
Vet	-	say \$2.00 per month (average over three years for four horses)	.10
Farrier	-	1 hour @ \$20 every six week	.67
		\$12.50 for shoes every twelve months	.05
			<hr/> .72
Insurance	-	4% of $\frac{\$1,200}{235 \text{ days}}$.20
Interest	-	15% of $\frac{\$1,200}{235 \text{ days}}$.77
Tending	-	10 minutes @ \$5.00 per hour	.83
			<hr/> \$ 6.10

These costs are area specific and the interested reader should alter these according to his locality.

As this cost represents about half the cost of running a chainsaw or about one-tenth of the cost of a bushman, the target calculation and therefore the cost structure is quite different from conventional logging operations. The target calculation is based on the productive capacity of the team rather than the extraction machine. The horse then becomes an aid to the bushman to do those tasks that are too strenuous.

DISCUSSION

Horses can be left in the bush during the week and taken home during the weekend. A small pen is made by running a wire around a few trees. The normal means of transport is by float towed behind the work vehicle.

Clydesdales are the preferred breed as they are good heavy docile horses. I have not been able to identify optimum heights but feel the bigger the better as this is important for breaking out. A larger horse would also be able to handle a larger average size haul.

Advantages

- (a) No tracking required.
- (b) Minimal setting up time compared with chutes or haulers.
- (c) Low capital cost in getting established.
- (d) Safety is improved.
- (e) Little stand damage occurs during extraction.
- (f) Good manoeuvrability allows working in heavily stocked stands.

Disadvantages

- (a) Good heavy horses can be difficult to acquire.
- (b) Suitable collars are hard to locate although all other harness equipment is easily made.
- (c) Uphill hauling should be avoided wherever possible.
- (d) Limited to small log sizes.
- (e) Low production levels

Using the method described, the writer has delivered 7,000 tonnes to the mill door over the last two years at an average of less than \$20/tonne. This cost includes the use of a self-loading truck to transport the wood 10-35 kilometres to the mill. This method of extraction deserves consideration by forest owners and loggers alike.

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