

THE POTENTIAL OF GRAPPLE SKIDDERS IN THE NEW CROP

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THE LOGGING OPERATION USED AT PRESENT

Caterpillar Skidder 518 with Esco Grapple Log Hauler
Caterpillar Loader 950 - Fleet and load
No of men : 6 including prime contractor

The reasons why I have chosen this type of set-up are varied and many, but generally speaking the last line is consistent high production, increased safety, low downtime, ease of management, versatility in handling different species of timber and last, more profit.

I will take each of these reasons and give a detailed explanation one at a time.

High Production

15-2 1/2 tonnes

Consistent high production is achieved by eliminating unhooking logs on the skids and reducing breakout time at the haul face. If you compare the fastest cycle time using conventional methods, i.e. pre-choke or pre-choke and bunch, with a Bell Logger you simply have added higher costs, too high production, in effect producing a nil effect, or marginal profit increase.

Increased Safety

The risk of injury to breakerouts and skiddies is eliminated because their jobs working in conjunction with the grapple skidder have become non-existent. There are flow on effects from this.

Psychological benefits : There is always a risk factor involved when men are working around moving machinery. In order to keep a conventional skidder moving in regular cycles the cross-cutters and skiddies have to drop what they are doing and be at the beck and call of the hauling machine.

With a grapple skidder operation the machine and men all work independent of each other, thereby allowing each to concentrate on the jobs at hand.

Low Downtime

No doubt individual operators have a large bearing on production

performance and downtime, but nevertheless I shall cite my own experience, bearing in mind that this is an exception rather than the rule.

In the five plus years that I have worked the Esco Grapple the only lost time suffered during normal working hours has been directly attributed to a broken hydraulic hose. There has not been one mechanical failure.

Of course normal and regular checks were carried out. Maintenance consisted of periodical greasing, eye-balling and the odd welding of cracks in the boom.

An annual going over of worn pins and bushes and bearings has been all that was required.

More Profit

From the three points registered prior to this, more profit is the result.

There are of course some factors which also attribute to this, not so obvious but just as meaningful.

So as not to appear biased I shall not sing Caterpillar's praises too loud except to say, the best machines in the world are only average unless you have the best service to back them, which is why we have chosen the Cat team with Esco Grapple.

Ease of Management

Operating the Esco Grapple gives another added benefit - versatility. Being able at any stage of the haul cycle to drop the drag behind the machine with the flick of a lever and be a hundred metres away in seconds, either freeing up a cross-cutter from a sit back or releasing a jammed chainsaw on the skids.

Quicker cycle times means more on the spot liaison with the whole crew.

Versatility in Handling Different Types of Species

The nature of our contract and the demands of Tasman Forestry Ltd, Murupara Branch, have certainly proved to be a testing ground for innovative thinking and versatile methods.

Example :

Species Logging in the Past Five Years

Corsican	Average Piece Size	1.00 tonne
Contorta		.75 tonne
Ponderosa		.31 tonne
Radiata outrow thinnings		.12 tonne
Radiata old crop wind throw		2.60 tonne
Strobus		.75 tonne

Those are just a few species to give an indication, and with each one the methods were slightly different.

For the method we use there is an ideal combination, i.e. cost versus piece size whereby our employers and ourselves are working without one subsidising the other, both making sensible profits and that is :

Piece size ranging from .75 up to 3 tonne
Reasonable terrain

COST OF ESCO GRAPPLE

This is the big 'cruncher' and the main reason for their being as scarce as 'turkey teeth'.

The main reason being, and this statement is made with a certain amount of respect, that most contractors are really just improved bushmen, therefore they generally perceive things at face value.

Compare approximate costs :

Cost of Esco Grapple and install	\$40,000
Cost of 3/4" mainrope and 5 strops	\$500

Quite a difference

Long Term

Cost of Esco Grapple and install	40,000
Finance over 5 years at 24.%	
Insurance	35,000
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	\$75,000
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Cost of breakerout or equivalent lost time for either operator or cross-cutter, hooking up drags and skiddy unhooking x 5 + 15% inflation	20,000 x 5 + 15% p.a.
Ropes and strops plus lost time for splicing	
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Around \$125,000

Remember at the end of your five year contract you still have an Esco Grapple worth between \$30,000 and \$40,000 which can be detached from your old skidder and put on the new one.

Using the conventional method, ropes, strops and breakerout, all costs incurred are totally written off.

DISADVANTAGES OF GRAPPLE SKIDDER

Terrain : Up Slope Hauling
Steep Sharp Guts
Muddy Terrain

- (i) **Up slope hauling** cannot be dealt with as successfully as conventional winch hauling but nevertheless the difficulties can be reasonably overcome by lighter, faster drags and half filling the tyres with water for added up front traction.

Large areas of a stand of Corsican were worked in this manner with good results.

Example :

Average Piece Size	1 tonne
Average Haul Distance	150 metres
Average Daily Output	210 tonnes
Target	180 tonnes

- (ii) **Steep sharp guts** can only be overcome by tracking in the right places, plus an experienced operator. As you can appreciate once the logs are secured in the Grapple they become a fairly inflexible part of the machine, whereas a cable skidder can drop the drag on approaching obstacles, run out rope until cleared, then winch in and away.
- (iii) **Muddy Terrain** : The bane and frustration of all operators can be effectively combatted by the addition of chains, either back tyres only or in severe conditions back and front.

An experience worth mentioning - in the winter of '83 after the April windthrow we struck really heavy muddy ground in Matea. Almost every uproot had to be shifted as we windrowed our way back through the fallen timber. After the first few days of little progress we fitted Canadian chains. The change was quite dramatic. Machine control was back to normal, coupled with a healthy jump in productivity.

DISADVANTAGES IN PIECE SIZE

Experience has shown that logs over 3 tonne are overly hard on the machine - too much rock and twist on the centre pivot, plus the danger of flipping over with sudden shift in weight.

Smaller Piece Size

Any logs under .75 tonne need pre-bunching as the gathering up slows the haul cycle down, making the operation uneconomical.

CONCLUSION

As owner operator of this machine, I believe that I can recommend with confidence to any logger this set up now or for future operation in the new crop.

As a general observation I am perturbed, to say the least, at the lack of administrative interest and lack of encouragement even after producing outstanding results in regard to safety and production.

