

INFORMATION NOTE

ODW 12.03

SYSTEMS FOR ADDING VALUE

FIREWOOD PROCESSORS, PEELERS AND POINTERS

Introduction

This Information Note is one of a series produced for a Technical Development Branch (TDB) Outdoor Workshop (ODW) and is produced as a guide to part of a harvesting system suitable for use in small scale woodlands. ODWs are a TDB initiative designed to offer practical advice to practical people through presentation, demonstration and user guidance. The ODW programme will involve repeating trials and introducing new systems around Great Britain so that a wide range of sites, systems and practitioners can be included.

Information has been gathered from equipment and method trials based at a single location. This information therefore must be taken as indicative only. Variation could be expected for other operations where factors such as terrain, crop specification, product specification, operating distances or operator efficiency differ.

Machines for Adding Value

Firewood Processor: The Kisa (Plate 1) is one of a range of firewood processors available, from small size models, suitable for domestic users, to large models suitable for full time contractors.

In a previous trial (1998) the Japa 100, Japa 600, Nokka PK 200 and Technorton Compact were tested. Although there were many differences in handling, all were capable of giving an acceptable product. Some machines had difficulty producing a 20 cm log length and the visual appearance of firewood varied.

Outputs ranged from 0.49 m³ per standard hour (shr) to 2.34 m³/shr. Costs ranged from £9.65 to £31.78 per m³.

Peeler/Pointer: The Neuhauser R1K (Plate 2) is a versatile combination peeler/pointer/splitter machine capable of producing a full range of forest fencing products. It is well made and designed, suitable for large estate requirement and the needs of the small contractor producer or farm enterprise.

Plate 1

Kisa Super-Kombi



Outputs measured were 101 peeled and pointed 1.7 m stakes/shr, at £0.24 each and 64 peeled 3.66 m rails/shr, at £0.38 each.

Firewood Processor Descriptions

Machine with **no** previous trial information:

- Kisa Super-Kombi, a large processor suitable for full time contractors.

The machines selected for the previous trial were:

- Japa 100, representing simple machines for small operators.
- Japa 600, representing larger machines.
- Nokka PK200, representing the largest processors suitable for full time contractors.
- Technorton Compact, representing universal sawbenches. Popular with farmers and small contractors.

The trial machines were all mounted on the 3 point linkage of an agricultural tractor, which is the most common power source.

Details of all the machines are given in Table 1.

Table 1
Firewood Processor Data

Make/Model	Kisa Super-Kombi	Japa 100	Japa 600	Nokka PK 200	Technorton Compact
Min power required (hp)	—	20	40	34	20
Cutting mechanism	Circular saw (Plate type)	Circular saw (Plate type)	Circular saw (T.C. tipped)	Shear mechanism	Circular saw (T.C. tipped)
Max log diameter capacity (cm)	30	20	23	20	30
Max log length capacity (cm)	52	c. 50	c. 50	60	53
Splitting mechanism	Hydraulic 4 knives	Screw type	Hydraulic 2 or 4 knives	Wedge (on shear)	Hydraulic 2 or 4 knives
Automatic splitting	—	No	Yes	Yes	No
Conveyor included	No	No	Yes	Yes	No
Safety device(s)	—	Tractor stop cord	Tractor stop cord, guarding interlocks	Driveshaft overload slip clutch	Belt drive disconnect pedal/ brake

Firewood Processors Outputs and Costs

The four machines in the previous trial were studied processing firewood. Output in m³ solid/shr and costs were calculated (Table 2).

Peeler/Pointer/Splitter Description

The Neuhauser model R1K powered by an agricultural tractor PTO shaft is easily transportable on the tractor 3 point linkage.

The machine can be driven by tractors with a minimum of 15 PTO horsepower at a maximum speed of 750 r.p.m. for peeling and 650 r.p.m. for sawing. Speeds below these quoted maxima are effective and the appropriate settings can be attained by following the manufacturer's simple recommendations.

The maximum round timber capacity is 15 cm, which should be sufficient for a majority of fencing material requirements.

The tractor PTO driveshaft powers the main peeler disc shaft by conventional multiple belt drive. In turn this powers a bottom layshaft for the belt drive to the 400 mm tungsten carbide tipped circular saw. The peeler disc has 4 removable knives and a feedscrew attached to the shaft axis on its cutting side for turning the roundwood. Above the feedscrew is an assembly with a serrated, adjustable, spring loaded gripper that holds the roundwood in place against the peeler disc. The adjustable downward pressure also regulates the throughput speed.

There are electric motor powered options of the same machine.

Table 2
Firewood Processor Outputs and Costs

Machine	Technique	Mean Piece Size (m ³)	Cost (£/hr)	Output (m ³ /shr)	Cost (£/m ³)
Nokka PK200	1 man working	0.007	15.09	1.13	13.35
	1 man working	0.013	15.09	1.22	12.37
	2 men working	0.013	22.59	2.34	9.65
Technorton Compact *	1 man working	0.013	14.30	0.45	31.78
	2 men working	0.013	21.80	1.30	16.77
Japa 100	1 man working	0.016	13.32	0.49	27.18
Japa 600	1 man working	0.017	14.65	0.70	20.93

shr (Standard Hour) includes allowances for Rest and for Other Work.

* The Technorton was tried in an alternative role splitting and pointing 2 m x 17/20 cm top diameter stake lengths. Output was 1.09 m³/shr or 89 split/pointed stakes shr, costing £20/m³ or £0.24 per stake.

The Neuhauser R1K



Peeler/Pointer/Splitter Outputs and Costs

Outputs and costs are detailed in Table 3.

Comments on Systems

Firewood Processors: A wide range of firewood processors is available to cater for potentially every need, from small domestic producers to firewood supply contractors.

Two man working was significantly cheaper than 1 man working in the machines studied and machines with automatic splitting had higher outputs and lower costs.

Most imported machines are designed for a cut log length of 30 cm or greater. Modifications to cut the common UK 20 cm 'open firegrate' has been carried out by the importers. Cutting such short lengths increases the amount of work required for a given quantity of fuelwood. On some machines with automatic splitting this can give blockage problems.

Peelers/Pointers/Splitters: The Neuhauser R1K is a good combination peeler/pointer/splitter machine for the usual range of forest fencing products, up to 15 cm diameter.

The size of machine and its versatility make it suitable for many small enterprises. From large estates producing mainly for their own needs with some sales, farm based enterprises, to the small contractor supplying a variety of outlets.

Safety: All operations require assessment of risk and operational training to ensure safety and efficient working.

Table 3

Peeler/Pointer Output and Costs

Product Description	Range of Raw Material Mid Diameters (cm)	Mean Vol. per Piece (m ³)	Species	Output Number of Pieces per Standard Hour*	Cost per Piece (£)
Peeled and pointed 1.7 m stakes	10 to 13	0.017	Western hemlock & Norway spruce	101 stakes	0.24
Peeled 3.65 m rails	6 to 9	0.019	Western hemlock & Norway spruce	64 rails	0.38

* Standard hours includes allowances for Rest and Personal needs of 21% and Other Work of 24%

Firewood Processors Suppliers and Cost

Kisa Super-Kombi - A. T. Osborne Ltd
Ower Romsey, Hants
Tel: 01703 814340/814343 Fax: 01703 812941
2003 cost (excluding VAT) £4 987

Nokka PK200 - Falcon Agricultural Machinery
Great Haywood, Staffs ST18 0ST
Tel: 01889 882701.
1999 cost (excluding VAT) £4 480

Technorton - Technorton Ltd
Unit N, Coder Road, Ludlow Business Park,
Ludlow, Shropshire SY8 1XE
Tel: 01584 872689
1999 cost (excluding VAT) £1 354
Additional cost of log splitting option £868

Japa models - Fuelwood Warwick (UK)
Claywood, Beausale, Warwick CV35 7NX
Tel: 01926 484673 Fax: 01926 485454
1999 cost (excluding VAT) Japa 100 £925
Japa 600 £3 000

Peeler/Pointer/Splitter Supplier and Cost

The Neuhauser is supplied for the UK by A.T.Osbourne, Forestry Engineers, Shelley Lane, Ower, Nr Romsey, Hants SO51 6ZL. Tel: 01703 814340, Fax 01703 812941.

Cost for the R1K trials machine was £4 750 plus VAT.

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Technical Development Branch

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