



Peat production by the Peco Method

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Large areas of Sumatra and Kalimantan have resources of peat land. Deposits already evaluated in Sumatra are typically of 3 to 6 m in depth with a calorimetric value of 5350-5550 Kcal/kg dry basis and 2890 Kcal/kg efficient value at 40% moisture basis. The energy content at 40% moisture is roughly 3.36 MWh/tonne. The exploitation of peat for energy is well known in Scandinavian countries, but the technology is new to South East Asia.

This article describes the methods adopted by one pulp and paper company to harvest peat.

Survey

The initial step is a survey consisting of transects to determine contour lines, peat depth and thickness, peat quality, ash content, heating value, degree of humidification, wetness, soil fertility and amount of fibre. From this a map can be produced to show the areas with the most potential for exploitation. A harvesting plan can then be made on which logging, drainage proposals and roading network can be based.

Land clearing

In the local situation, the land is covered by mixed tropical hardwood forest with a standing volume of 150-200 m³/ha from which selective harvesting has already removed larger individuals. Logging is carried out and logs are extracted by manual methods onto railway lines which lead to either the nearest river or dry land. All logging debris and stumps are then removed by a combination of hydraulic excavator and tractor-drawn trailer and finally by hand picking of remaining surface material which is likely to hinder peat harvesting operations. Main drains and internal field drains must also be established

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Hand loading of pulp logs. Photo: M. Williamson



Extraction of pulp logs by rail from peat area. Photo: M. Williamson

before the area is ready for peat production. Levelling and profiling of the fields is then carried out. A tractor-drawn deepmiller, which has a rotating drum equipped with sharp cutting knives, homogenises the peat. This is followed by a screw leveller, and if necessary, grading. The process of preparing the land is a time-consuming and expensive operation.

Harvesting

All prime movers used for harvesting are 4WD agricultural tractors with dual wheels fitted front and rear. Horse power ratings are 100 to 130, depending on the task. Milling is carried out first to allow the peat to be dried by solar energy. The rotating drum cuts down to 15 to 20 mm in depth and leaves the material in a granular and pulverised form. This operation is carried out early in the morning. When the moisture content of the milled layer is reduced to 55-60%, the peat is harrowed to accelerate the drying process. Ridging is the first phase of collection and a front-mounted ridge ruler with a working width of 4.5 m is used to accumulate the peat into strips for the harvester. The Peco harvester is tractor drawn with a pickup and conveyor belt driven from the tractor power take-off. This delivers the peat directly into a trailer for delivery to the stockpile. This operation is carried out in the late afternoon when peat moisture content has been reduced to 40%.

Maintenance

After the peat layer has been reduced by 20 cm, maintenance becomes necessary to remove new solid stumps and logs, to clean the fine solids from the settling ponds and to deepen the field drains.



Peat miller. Photo: M. Williamson



Peco harvester. Photo: M. Williamson

Post-harvest management

Each 200 ha block is expected to last for six to eight years at an annual production of 200,000 tonnes. When harvesting is completed, at least 40 cm of peat overlying mineral subsoil should remain. It is intended that these areas be established in plantation for future pulpwood production. This involves further drainage with channels at 500 m intervals with the transport network based upon the drainage spoil. While the peat harvesting is now well established, the long-term viability of

plantation forests has yet to be proven.

Cultivation of the peat fields prior to planting will probably be necessary to loosen peat which has been compacted by the frequent machine movements during the course of harvesting.

So far, 100 ha of species and provenance trials have been established with *Acacia crassicaarpa* and *A. mangium* the most promising species to date. Some local species such as *mela-leuca* have established well but grown slowly. Many other potential species have yet to be tested.

NZ PLANTATION FOREST OWNERSHIP

(Based on Estimated Percentage of Net Stocked Area of 1.3 Million Hectares @ May 1992)

