WARREN FORESTRY

Forest Investment Excellence

Extract from the Prospectus for Seventh Forest Partnership

(If you want a full copy of that Prospectus sent to you, and/or the Investment Statement, click our Contact Us page and fill in the boxes)

The Merits of Douglas-fir *Pseudotsuga menziesii*

Over 30% of investment by Seventh Forest Partnership will be in Douglas-fir, sometimes also known as 'Oregon'. This species and Radiata pine, are the only two commercially proven species grown in New Zealand on any scale.

Although the rotation length is usually longer for Douglas-fir than Radiata pine, and although it costs more to plant than radiata, there are a number of factors that make it a very worthwhile investment in its own right and we think, an excellent diversification for anyone already investing in Radiata.

Recognised Species. Since 1993 Douglas-fir has enjoyed increasing recognition from forestry investors in the South Island. Over the last few years new Douglas-fir plantings in Canterbury, Otago and Southland have almost matched Radiata. The interest of investors reflects awareness of several things: the strong demand and high prices paid for Douglas-fir, the potential for high growth rates in the south, and the different risk profile of Douglas-fir with respect to bio-physical and market risks.

Major Place in World Trade. Douglas-fir has an international reputation as a premium structural timber and has been traded for over 100 years from North America to timber markets all around the world. Douglas fir is particularly valued in Asian markets and accounts for about a third of the volume of softwood logs imported into Japan. A small percentage of the Asian imports are sourced from New Zealand.

Qualities of Douglas-fir. Most of the world's sawn timber is processed for structural uses. Douglas-fir is positioned at the top end of this huge volume market because of its high strength, good stability, and low weight characteristics. Other advantages include not needing to be kiln dried, or treated with chemicals for most uses. An important feature of Douglas-fir is that the central core-wood (juvenile wood) portion of the tree can be utilised for structural timber. Consequently the recovery of valuable lumber from logs is high compared to many other types of tree, which possess low quality core-wood. Another outcome of Douglas-fir's core-wood characteristics is that small dimension logs can be profitably processed into lumber.

Pruning does not enhance the value of Douglas-fir as a structural timber. It can therefore be grown without the expense of pruning.

Supply Shortfall. The vast Douglas-fir forests of North America are mostly natural forests and the majority are publicly owned. These forests are increasingly valued for conservation purposes and huge areas have been set aside for reserves and regulations affecting forestry activities on remaining areas continue to intensify. The result is dwindling supplies and more expensive wood.

The export prices paid for Douglas-fir over the last decade confirm its relatively high value. Unpruned structural grade Douglas-fir logs have commanded approximately the same prices as similar sized pruned Radiata logs. Another feature of Douglas-fir is the comparatively high value of small dimension saw-logs.

Potentially High Growth Rates. Work by Forest Research has shown that Douglas-fir can grow exceptionally well in moist areas of the Canterbury High Country. In fact the highest recorded growth rates of Douglas-fir in the world (about 40 cubic metres/ha/yr.) were measured from a stand near the head of Lake Ohau. This compares well with good growth rates for radiata pine and is well ahead of the highest Douglas-fir growth rates recorded in North America at about 22 cubic metres/ha/yr.

New regimes for early harvest of Douglas-fir. Whereas Douglas-fir used to be grown on long rotation regimes of 50 or more years the focus is now on shorter rotations. The suitability of small dimension saw logs for processing into structural lumber means on good sites production thinning can begin as early as 25 years and clear-felling from about age 35 years.

The Rationale for the Seventh Douglas-fir regime is as follows:

The site is specifically selected as a superior location for growing Douglas-fir. In inland Canterbury good summer rainfall and cooler well-drained soils are required to achieve high growth rates and relatively sheltered sites are needed to achieve good height growth and better quality logs at harvest. Rainfall on the Douglas-fir site is estimated to average 1100mm per annum, well-spread throughout the year. The site is predominantly 'shady' country, sheltered from the NW wind, having east to south aspects. The soils are light, free draining types.

The regime modelled aims to maximise the outturn of small branched and longer-length saw logs on a relatively short (35 year) rotation. The StandPak Growth and Yield Model developed by Forest Research Ltd has been used to model stand growth and log grade outturn on this site. The model was set with a Site Index of 33 and a Site Basal Area Potential of 'High'. These indices were selected after examining height and basal area growth data from comparable Douglas-fir forests located on similar high country Canterbury sites.

To realise the growth potential from this site at a relatively young age requires maintaining a relatively high stocking. This is achieved by undertaking a single waste thinning when sufficient branch suppression has been established. No pruning is required. If high premiums are being paid in the future for large dimension Douglas-fir saw logs there will be the option of switching to a longer rotation production thinning regime instead of early clear felling.

Sources. This section is based on the following sources and our own knowledge or opinion:-

Forest Research Institute Bulletin No.124 'Introduced Forest Trees of New Zealand' - *Vol 14. DOUGLAS-FIR.- J.T. Miller and F.B. Knowles.*

Forest Research publication 'Exotic Trees In The Canterbury High Country' - *N.J. Ledgard and M.C. Belton.*

The NZ Tree Grower - August 1993 *issue, page 23 - 'Record growth for high-country Douglas fir stand' - article by Mark Belton, Ministry of Forestry CHCH.*

The NZ Tree Grower - August 1994 *issue, page 4 - 'Douglas fir - species with unrealised potential' - article by Eoin R.H. Garden, Millers Flat*

The NZ Tree Grower – May 2000 *issue, page 39 - 'Douglas fir – a farm forestry species?' - article by Mark Belton,* Mark Belton and Associates Ltd*, Douglas-fir Specialists, Christchurch*

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