

SUMMARY OF DISCUSSIONS FOLLOWING PAPERS

J. P. FITZGERALD*

Following SEXTON's introduction:

J. Henry asked what proportion of the 124,000 acres of potential forest land was planted and at what rate it was being increased.

Sexton: Planted area 8,000 acres; increasing at a rate of 1,000 acres per annum.

N. Barr commented that a valuable aspect of sandhill forestry is that it complements the clay soils of Auckland Conservancy, by providing winter work during a season when much labour is redundant on farms on clay lands.

HOCKING's paper elicited the hope from the Chairman that Chisholm's thesis comparing forest and agricultural returns from similar land would be published in the near future.

N. Barr stated that the comparison would be particularly interesting to farm foresters. It indicated the excellent potential of integrated farm forestry and sheep farming on this type of land: returns would run close to those from dairying, and would certainly be better than from sheep farming alone.

P. Olsen voiced surprise at the quoted returns of 4½ to 6½% from forestry, when the allowable cut was set so low. What was the reason for the discrepancy?

Hocking: Due to the fact that very little planting was done during the war years: yields were coming from older age-classes, and were limited in extent.

L. Poole asked what prospects there were for all of the 39,000 acres being put into trees in the long run.

Hocking: The State would be preoccupied with unstable sands of the Younger Dune Complex for some time to come; but land use on drier soils of the Older Dune Complex was already changing, as local owners became aware of the possibilities of tree growing.

J. Wendelken, referring to Olsen's question, stated that it was not practicable to store growing stock on sand country: it resulted in a fall-off of the M.A.I. He asked Hocking to comment on means of maintaining the vigour of stands, perhaps by pursuing lower basal areas.

Hocking: There was little risk of impoverishing the soils: they were fairly high in various nutrients, and would maintain healthy stands until a good age. The earlier Waitarere plantations progressed from older stable soils on to unstable areas.

Wendelken commented that it was not impoverishment that worried him, but the risks of stagnation and wind-break, or wind-throw.

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Hocking: Except on the moister sand-plains there was little risk of wind-throw. There was, however, considerable risk of wind-break in stands thinned too late and too lightly.

A. Jewell affirmed that, despite the narrow base of an agricultural/forestry comparison based only on a concept of local sawlog markets, the results were most encouraging. In terms of overseas markets it would be even more favourable, and the paper should be published widely.

The discussion following KEAR's paper proceeded:

J. Rawson wished to know the nutrient content of the sandhills compared with those, for example, of the pumice plateau.

Kear: Sands derived from local constituents, as in the far north, were poorly supplied with nutrients; but sands from materials washed down by rivers were frequently more fertile. A survey of the Northland sands was at present under way, and should provide some of the answers.

Wendelken: North of Kaitaia blow-outs expose a hard red-brown rock, apparently impervious to tree roots. How extensive was this rock beneath the sands, and could its extent be determined?

Kear: Little information available; but at Waiuku and at Raglan individual layers of loose sand were seldom more than 30 ft thick, before striking consolidated layers. This indicated that there had been cycles of sand deposition, and the same pattern probably recurred in the north. Actual form of the consolidated layers would correspond with that of the original sand dune profile—*i.e.*, very irregular.

Levy: Along the Ninety Mile Beach there were frequently layers of iron oxides on clay banks. Were they podzol remnants, or due to some other cause?

Kear: Possibly the former, but they could also result by redeposition from solutions derived from the weathering of ferromagnesian minerals in the profile.

I. Barton enquired about the relative rates of erosion on coastlines.

Kear: Erosion and deposition patterns varied with situation: deposition was prevalent along the Manawatu coastline, but erosion was predominant in the far north during the current phase of the cycle.

WHITEHEAD'S paper was presented by *Hocking*, whom the Chairman asked to convey to the author the meeting's appreciation and wishes for a speedy recovery.

A. S. Wickens mentioned that salt-laden winds are not only detrimental, but that they also convey minerals, plankton, etc., which may improve soils inland.

Hocking: Soil Bureau had worked on this, and found that effects vary. Severe scorching of foliage is characteristic following gales not accompanied by rain.

Discussions following papers presented at the evening session were not recorded so fully, and only summaries of the main points are available.

RESTALL amplified, for the benefit of various questioners, several aspects of his paper:

- (a) Both lupin culture and artificial fertilizers produce intensified green foliage colour in the pine crop.
- (b) Maintenance of tractors due to abrasion by sand was actually less than when working in mud or on pumice country.

LEVY and ST JOHN replied to questions about their joint paper:

- (a) The high basal area in unthinned stands on sand country was accounted for by the low rate of mortality. There may be some error in the curves extrapolated beyond the age of oldest stands for which data were available.
- (b) No correlation could be found between rate of growth and depth of sand at Waiuku.
- (c) Recovery of ironsands at Waiuku would be accommodated by a cutting pattern to release about 70 acres per annum.

Questions and discussion on WHITESIDE's paper indicated that market demand would probably dictate a rotation of about 40 years for *P. radiata* on sand country. Yield from a 30-year rotation would not be greater.

Despite the limited silvicultural response of sandhill *P. radiata* stands, the higher grade recovery would still be sufficient to outweigh lower costs of untended stands. Moreover, it was considered that the Auckland area provided fewer market outlets for low grades of timber than those tributary to the pumice plateau. Resin pockets had not been found of any consequence in timber grown on sand country.

The chairman concluded discussion on the symposium with the statement that sand dune forests in Auckland and Wellington provinces had the following points in common:

- (a) Land was available.
- (b) Ready markets were available.
- (c) Quality of timber produced was good.

It followed, therefore, that management must aim to be intensive, in order to balance the relatively lower yields.