

NOTES

RIMU SEEDING IN THE TERRACE PODOCARP FORESTS OF SOUTH WESTLAND

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With the development of management systems in these forests it is desirable to determine the spread and germinative capacity of rimu (*Dacrydium cupressinum* Soland) seed and the periodicity of seed years.

A study, using seed trays, was established in 1954 and has been continued on an annual basis. In 1956 it was maintained for the full year to determine the pattern of seedfall throughout the year. The trays were sited to assess distance of seed fall from the forest edge, distance and direction of seedfall from lone female trees, seed dropped by birds under lone perching trees, and the subsequent effect of rodents on the seed.

As the study has been in operation for eight years some very interesting facts are emerging.

(1) Peak seed years occurred in 1954, 1959, and 1960 (Fig. 1), indicating the possibility of a 5- or 6-yearly cycle. Seed production in 1955 and 1961, as would be expected, was very poor, with moderate seed crops in the intervening years, suggesting a physiological build-up.

(2) There are, as yet, no obvious correlations between the summer climatic conditions when the seed is fertilized and the quantity of seed produced in the succeeding year.

(3) The maximum fall of viable seed occurs from mid-March to mid-April (Fig. 2). Although seed falls throughout the year, the total fall and percentage of viable seed decreases markedly after the above period except if there is a heavy storm in May, when a lot of non-viable seed may fall.

(4) The distance of seedfall from the female tree or forest edge varies according to the prevailing weather conditions. If there is a calm seedfall season the maximum seedfall distance is up to 1 chain, whereas if there are a few storms during the season the effective distance may be up to 2 chains. At these greater distances viable seed numbers are very low.

(5) Up till now viability tests have been unreliable but do indicate a high variability from year to year. For example in 1957, 74% of

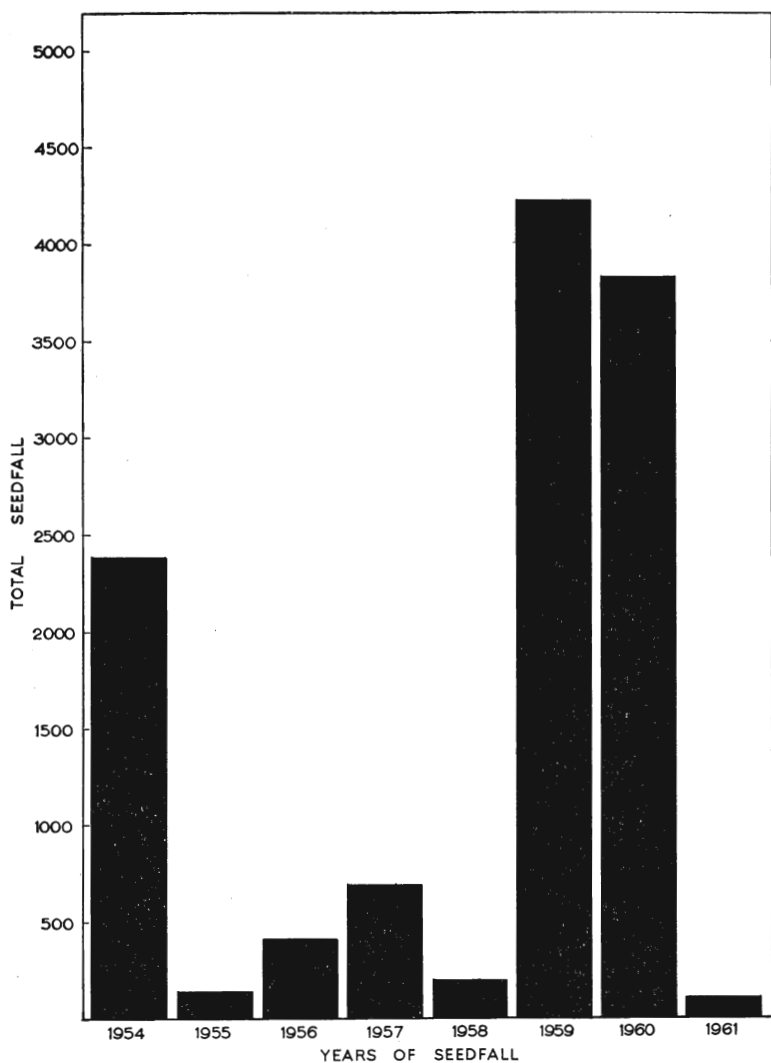


FIGURE 1. ANNUAL RIMU SEEDFALL AT FOREST
EDGE. SEASON FEBRUARY TO JUNE

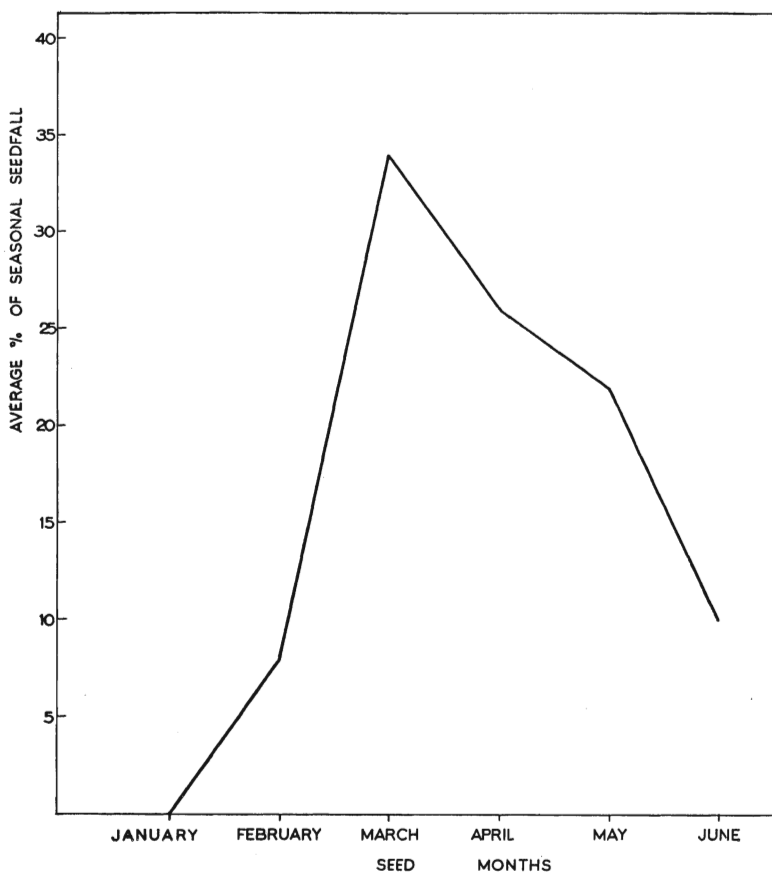


FIGURE 2. AVERAGE MONTHLY RIMU SEEDFALL AT FOREST EDGE AS A PERCENTAGE OF THE SEASONAL TOTALS FOR 1954 TO 1961

the sound seed was viable but in 1959 only 1% of the sound seed was viable. However, the tests show that most of the viable seed falls from mid-March to the end of April.

(6) Bird droppings containing seed occur while in flight but are more concentrated under perching trees, when significant numbers of seed have been regularly collected. This seed has a high viability percentage, particularly in March and April when the birds are

selectively feeding on the succulent red arils which normally contain the viable seed. These results indicate that birds play a vital role in disseminating the viable rimu seed crop.

(7) Seed assessments in the specially constructed rodent trays indicate that these animals have little effect on seed numbers in a good seed year. Trapping trials by Zoologist J. S. Watson showed that rodent population numbers were low in the trial areas.

(8) Studies have shown that opossums and wetas also feed on rimu seed when it is available in any quantity. The rimu seeds are usually fragmented and it is considered that these animals only have a minor effect on seed numbers. Bush robins are voracious feeders on fallen arillate rimu seed.

As the number of annual observations increases so the study will yield results of multiplying interest and value.

In February 1961 the scope of the above study was enlarged and now includes three representative strips in Wanganui and Ianthe State Forests. Rain gauges and a series of maximum-minimum thermometers have been recently established and a wind force record kept, in the areas of the rimu seed studies.

Introduced Animals and Poisonous Tutu

"... an elephant . . . , after being landed in Otago, was marched inland by its owner for a considerable distance. Arriving at a suitable halting place, where the vegetation was abundant, the owner determined to give the animal a spell of a few days' feeding. The grass, which had been burnt off during the previous season, had shot up again with renewed vigour, and amongst it was a very fine crop of succulent young plants of *Coriaria*. The elephant fed amongst this herbage for four hours, and afterwards went to a neighbouring creek and had a long drink. In turning back, the animal began to reel, fell on the ground and died after three hours; so that it took only seven hours from the time the beast began to feed amongst the plants until he died."

(Letter from Dr. Haast, quoted in 1869 *Trans. N.Z. Inst.* 2, p. 399)