

THE USE OF LARGE-SCALE AERIAL PHOTO MOSAICS FOR PLANNING AND CONTROL OF AERIAL SEEDING

A. I. PAGE*

Much of the area of winter-felled cutover in Kaingaroa Forest has to be aerially sown in order to obtain satisfactory regeneration. A regular distribution of seed is important in this operation to ensure uniform regeneration, and to obtain this the cutovers must be flown at regularly spaced intervals (*e.g.*, one chain wide using a "Swathmaster" spreader fitted to an Aero-commander Snow aircraft).

In previous years, areas to be sown have been marked on the ground with red-painted 44 gal drums, and flying has been left to the pilot. The resulting flight line espacement has been erratic and the work content in painting and distributing the drums has been as high as 30 man-days.

It was decided to attempt to improve on this in 1967 by using aerial photographs. Vertical photographs of the areas to be sown were taken through a hole in the floor of a Cessna, flying at 4,000 ft above the forest, a fortnight before the operation. 2½ in. × 2½ in. formats were produced by a hand-held Hasselblad camera equipped with a 3 in. focal length, normal angle lens. These were enlarged to 6 in. × 6 in. prints, cut, and made into mosaics of approximate scale 1 in. to 6 chains.

The provisional areas to be sown were marked on the photographs and divided into quarters parallel to the flight direction. The quarter lines, plus the number of flight lines within each quarter, were then marked on. This gave the pilot a guide to the spacing of his flight lines. The day before the operation, each cutover was visited and the felled boundary marked on the photographs. A few hours in the draughting room then produced an exact acreage to be sown in each compartment.

The uses and advantages of the photographs were as follows:

- (1) They enabled the pilot quickly to recognize the areas from the air.
- (2) The part of the cutover to be sown was easily distinguished without the need for ground markers.
- (3) As a guide to flight line espacement their success can be judged by the 1967 flight line data: 26% of the lines were outside the range 35-95 ft (*i.e.*, ± 50% of target) as opposed to 40% in 1966. This was a reasonable performance considering that this was the first time the photographs had been used.

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- (4) They enabled the exact acreage to be planimetered at the last moment, which allowed precise metering of seed for each cutover, and a check to be kept on the flow rate of seed from the hopper. In view of the high cost of seed (78% of the total cost) this is an important factor.
- (5) The photographs allowed all concerned with the operation to be familiar with the eighteen cutovers involved, which added to the efficiency and smooth running of the operation.
- (6) The mosaics were given to the draughtsman as operational returns, thus avoiding the necessity of compiling separate maps for this purpose.
- (7) The mosaics proved very useful later on in planning and control of assessments of stocking arising from the sowing.
- (8) Their relative economy: total cost of the photographs was \$155.00, which worked out at nine cents per acre (1.4% of total cost) and is considerably cheaper than the method of marking cutovers with oil drums. It had the added advantage that it did not tie up those extremely scarce commodities, men and trucks, for long periods of time.