

The operation was carried out in fifty-five hours by the Air Force, and the problems of control and flying were overcome. The farmers were well satisfied with the distribution and measurements on the ground showed that the distribution could not be improved on by alternative methods. The cost was found to be 15s. per acre for transport (8–25 miles) and distribution of $2\frac{1}{2}$ cwt. per acre.

Arrangements were made for the Department of Agriculture to further check the distribution on a 48-acre project at Ohakea, where it was found that the most effective distribution was obtained by flying at 400 ft. in parallel runs 76 ft. apart with the hopper four-sevenths open.

A demonstration was arranged on the hills near Wellington in Ohariu Valley. A large attendance, including His Excellency the Governor-General, diplomatic representatives, members of Parliament, and farmers, was satisfied with the simplicity and effectiveness of the aeroplane in top-dressing very steep, difficult hill country.

During the year, representatives of the Bristol Aeroplane Co. visited this country to investigate techniques and requirements with a view to adapting the Bristol Freighter for this work, and it has been reported from England that good progress has been made.

The outcome of these trials has been the rapid development of an aerial top-dressing service by operators of light aircraft, who have distributed over 3,000 tons of fertilizer in the past few months at a cost of from £3 to £7 per ton for distribution. The increasing demand for this service indicates the farmers' satisfaction with this method for the fringes of the hill country.

Subsequently, the R.N.Z.A.F. have built an internal hopper in the Miles Aerovan which will be available for trials in the near future. The Advisory Committee has prepared and the Council has approved and submitted to the Government an interim report on the results to date, with a recommendation that a small flight (three) of suitable aircraft be obtained to undertake a three to six months' top-dressing task from a suitable aerodrome. This logical next step would make possible the evaluation and costing of large-scale aerial top-dressing by freighter aircraft, which is complementary to the work already being done by small aircraft.

The tremendous significance of this development is emphasized by the following facts :—

- (a) Top-dressing with phosphate is one of the most practical and effective methods of combating soil erosion in New Zealand, as the lands affected are dominantly hill-country grasslands.
- (b) Several million acres of hill pastures require top-dressing.
- (c) Top-dressing not only arrests deterioration, which is too prevalent, but it increases production, cover, and stability of the soil.
- (d) The response to top-dressing is measured by the three-fold increase in meat, seven-fold increase in butter, and the twenty-fold increase in cheese during the past forty years, largely resulting from top-dressing of easy ploughable land.
- (e) Experience shows that there is a much larger area of hill land the production of which can be raised from one to more than two sheep per acre by top-dressing and oversowing with clover seed if coupled with prudent management.
- (f) The further development of New Zealand's farming resources is being stifled because the highly responsive soils are being starved of phosphate.
- (g) The output of superphosphate from works in New Zealand—up to 600,000 tons annually—is sufficient only to top-dress 6,000,000 acres of the 30,000,000-odd acres farmed.
- (h) The great bulk of our exports—£150,000,000—are the products of our grasslands, but no more than £1,000,000 worth of phosphate is imported to offset the drain of this fundamentally important material.