# AERIAL SUPERING OF PINES, 1968.

By K. Haunold.

For the first time in pine plantations in W.A., aerial application of superphosphate was attempted in October, 1968.

The operation involved the application of 260 tons of superphosphate to 1295 acres (net) of plantation in the Neaves and Amarante sections of the Gnangara plantation, consisting of 6 - 7 year old stands. The application was carried out by Agricultural and General Aviation Pty. Ltd. at contract rate of $5.45 per ton for spreading only.

Total cost per acre by Aerial methods - $4.48
Total cost per acre by ground methods 1966 - $5.21, a saving of 73 cents per acre.

Advantages of Aerial Supering are:

1. Direct costs reduced.
2. Man hours for both staff and wages men reduced.
3. Labour costs are rising faster than plant costs and we must find ways of keeping the labour content of any job to a minimum.
4. Distribution of super more even.
5. Capitalization in plant for ground supering would not be necessary.
6. Obstructions in the way of unpruned stands, slash or stumps, would be no further obstacle requiring preliminary work.
7. It is possible to use bulk super which is cheaper and the operation can be confined to the month when super is cheapest.

Two landing strips were used, one at the Northern end of Silver Road which was approximately 30 chains in length, and landings and take-offs were all made on the N.W. side of the super dump, so that it was necessary for the plant to turn at the dump. The strip at Amarante Block was 65 chains in length, and it was possible for operations to be speeded up by planes landing and taking off in the same direction, stopping at the dump for a few seconds to fill up with super. If future landing strips could be established in the direction of planted rows, then the contract price should be accordingly lower. Planning for this should be completed well in advance so that work can be carried out in time for the strips to consolidate.

The strip width for supering was calculated by the pilot, and also the load to be carried, which was a maximum of 13 cwt.

Runs were made along the planting rows, and the strip width varied from 25' to 30' depending on length of run and strength and direction of wind.

The quantity of super is thinner on the edges of a run and the spacing allows for overlap to compensate for this.

For a marker, a jeep was placed at one end of the block a short distance away from the pines, so that the pilot could detect his run and line himself up with the planting rows, and the jeep was then shifted further to the next flight run.

The unit used for loading the super was a combined fuel truck and rear end loader 7 ton Bedford truck. On the end of the chassis a cabin was fitted with all the driving and loading controls available. A two-way radio was fitted to the combined unit so communication between the pilot and loader driver was possible, also if any complications arose, the pilot could be notified immediately or vice versa.

The application was monitored by Research Branch in order to ascertain the uniformity of the application and to suggest improvements that may be desirable. Shallow metal trays were used and these were spread both across and along the flight lines.

This sampling method indicated an average amount of fertiliser deposited per tray as equivalent to 2, 72 cwt/acre. The considerable discrepancy between this and the planned application rate of 4 cwt/acre is presumably due to one or more of the following reasons:

(a) A certain amount of large granules bounced out of the trays.
(b) The area to which the fertiliser was applied included both internal firebreaks and margins of external firebreaks, whereas the amount obtained was calculated on the basis of net area.
(c) A small amount of super was left over.

Patterns of application evident from deposits in trays were:

(1) Along the flight line - higher rates near the beginning and end of the line. This could be due to mechanical and/or human factors.
(2) Across the line of flight higher rates near the edges of blocks being supered. This is apparently due to a human factor.
(3) On any block, a high rate on the leeward side. This would be due to drift of the lighter particles.
(4) Some deposition of super on breaks at the beginning and end of a flight and on the leeward side of an area being supered.

Conclusion.

Although no sampling was done of the previously used ground methods of supering, observers who have seen the results of both agree that the result of the aerial method is a far more even spread. In unpruned stands it is hard to imagine an even spread by ground means. However,

wastage on breaks at the beginning and end of runs could be reduced by deliberately missing say, the first and last chain of runs and subsequently making several runs across the ends to cover this section.