THE APPLICATION OF CROP PROTECTION METHODS.

PART II. DUSTING.

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The experiments carried out at Castlereagh Estate by Dr. Dike and Mr. Baker, the Superintendent, showed that dust could be distributed satisfactorily under conditions of moderate rain and steady wind. However, it must be stated in fairness that the areas dusted were all adjoining good roads and it was reasonably easy to obtain good coverage.

Further experiments were therefore undertaken and it is the applicational aspect of these experiments that I am going to describe. On St. Coombs estate a two acre block of tea pruned in July 1950 was dusted every five days until early November when the interval between dustings was increased to seven days. The area has a cart road above it and a pathway below and with a steady south west wind, good distribution of dust was obtained by dusting from the path. However, in early September wind conditions were not favourable and it was found that dusting was best carried out from the cart road in the very early morning utilising a downward convection current instead of true wind.

This finding has been applied in the large scale experiment which was begun on the 24th October at Kataboola Estate, Kotmale. In this experiment a whole division is being dusted and the unit for application purposes is a *field*. This at once raises many difficulties since the fields are of most irregular shapes.

There has been virtually no prevailing wind at Kataboola since this experiment began and convection currents have had to be used to distribute the dust.

On paths 3-4 labourers are used to propel the machine which is mounted on a trolley, and one man operate the dusting mechanism. It has been

found that the machine operator cannot see where the dust is going and a "spotter" seems to be essential. This "spotter" conveys instructions by means of visual signals (flags have been used) to the machine operator. This system has worked quite well. On roads the machine is mounted on a small lorry and similar visual signals convey instructions to the lorry driver and the machine operator.

Starting at dawn, areas below roads and paths are dusted using the downward air current. This persists until about 6.30 a.m. when conditions become confused due to the sun rising and in general, dusting must be stopped for about an hour. After this interval the general convectional trend is up the slopes and using this air current the areas above the roads and paths are dusted. By about 10 a.m. on most days the leaves are dry and the upward convection currents are so intense that generally speaking dust cannot be applied satisfactorily.

The method just described works very well in the ideal case but many local disturbances arise and I do not think that on the average more than 75% of the bushes in a field are dusted in a given dusting round.

Under these north east conditions the mean application rate has been 10 acres/hour. I wish to make it quite clear that this figure has been calculated from dusting on 16 occasions representing a total area of some 550 acres.

An interesting observation made on one occasion was that the actual time that dust was issuing from the machine was 1.3 hours and the area covered was 30 acres. On this occasion the total time taken from the start to finish of operations was 3.5 hours. I give these figures as some indication of the amount of "dead" time which must be considered when dusting is carried out on *defined* areas.

I emphasise that my experience is only of north east monsoonal conditions but I think that some of the observations recorded will be of general interest.