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G. R. W. Meadly
SOME POINTS ON USING WEED SPRAYING EQUIPMENT

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THE first spraying of cereal crops in Western Australia for the control of weeds was undertaken in 1950. Within three years the area treated reached 300,000 acres and spraying operations for weed control are now regarded as a routine procedure on a large number of wheat farms.

This rapid increase in the use of chemicals for weed control was due largely to the discovery that hormone-like substances, including 2,4-D and M.C.P.A., destroyed plants such as wild turnip and wild radish without affecting the cereal with which they were growing. The spectacular progress would not have been possible, however, without the development of spraying equipment capable of applying an even coverage to the herbage with relatively small volumes of solution.

Prior to the advent of hormone-like herbicides a number of other chemicals had been used, particularly in Europe, the usual rate of application being about 100 gallons of solution per acre. Although inconvenient, it was practicable to use such amounts with relatively small acreages of high yielding crops. Under Australian conditions with large areas and much lower average yields, both practical and economic difficulties arose with such volumes. As the new chemicals readily formed solutions or emulsions and in most cases less than 1 lb. was required to treat an acre, agricultural engineers immediately explored the possibilities of reducing the volume of solution applied. By modifying the nozzles and reducing the

Fig. 1.—A trailer unit with a 30ft. low-volume boom spray towed by a four-wheeled-drive vehicle
pressure it was found possible to obtain an even and effective coverage with less than ten gallons per acre. Most of the weed spraying in Western Australia is being undertaken with 6-8 gallons per acre.

Ten years ago 4 oz. of active chemical in 6 gallons of water spread effectively over an acre of crop would have been regarded as a tall order. Now it is commonplace, often to the extent of farmers becoming somewhat careless regarding applications. When using such small quantities the work must be done accurately and the equipment given every care if good results are to be maintained.

The first job is to calibrate the spraying unit. A chart is usually supplied by the manufacturers but it is advisable to check the output both initially and as the work is proceeding. The quantity of solution being applied per acre is dependent on the length of the boom, the size and number of the nozzles, the pressure and the speed at which the unit is travelling. The boom and nozzles can be regarded as constant at the time of any calibration, the two variables being the pressure and the ground speed. Most low volume spraying is undertaken at 25-30 lb. per square inch of pressure and booms are constructed to apply approximately 8 gallons per acre at five miles per hour.

A 30ft. boom with an effective span of 33ft. travelling at five miles per hour will spray one acre in three minutes. The quantity of solution passing through the boom in three minutes is therefore the volume being applied per acre when moving at that speed. This volume can be checked when the equipment is stationary and rechecked under operating conditions. As the work is proceeding the area covered with each tank of solution should be calculated from time to time.

Once the rate of application has been defined, it is important to maintain a constant pressure and ground speed. An increase of 10 lb. in pressure raises the rate of application by about 10 per cent while an increase of one mile per hour reduces it by 20 per cent.

Blocked nozzles can be very annoying and time absorbing but unless cleaned promptly will result in uneven weed control. Clear water should be used whenever possible and filters kept clean. Care should be taken when removing obstructions not to increase the size or alter the shape of the nozzle opening. Metal probes are likely to do this. When replacing the nozzle it should be adjusted so that the fan spray overlaps that from the adjoining nozzles. By this means, with the boom set at an appropriate height, usually about 2ft. from the ground, the weeds receive a double coverage of spray.

Attention to equipment is equally important when spraying has been completed for the season. All nozzles should
be removed from the booms and cleaned, while the boom itself should be flushed thoroughly with water followed by a quick run through with a light oil. The tank and connections should also be drained and flushed. Little attention is then required when the unit is next used.

One final note of warning. Although 2,4-D is not poisonous the ester type in general use is quite volatile and with higher temperatures vapour may be formed. Spraying equipment, therefore, should not be stored near gardens or susceptible crops, tomatoes and grapevines being particularly sensitive.

(From a Country Hour broadcast. By courtesy of the Australian Broadcasting Commission).

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