

## AERIAL SPRAYING

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### Some Points from an S.A. Operator's Viewpoint.

The Aerial application of Fertilizer, Crop Spray for Pest Control and Aerial Weediciding is successfully carried out by a number of operators in most States of Australia today. The first two mentioned provide operators with established seasonal work over a considerable period of any one year, and are increasing encouragingly. It is the aerial application of Weedicides in the period June to September approximately which is not yet fully worked and this has a direct bearing on expansion in this field of Agricultural Flying.

### Utilization.

It is the above period mentioned which prevents Operators from desirable all the year round utilization of Aircraft; craft which are restricted to essentially Agricultural Flying, their convertibility in the main, being from liquid to solids distribution, i.e., Top dressing, Trace element spraying, sulphuring and seed sowing. This limited seasonal utilization directly controls cost, having liquidated some Companies in the past, and which at present is a factor concerning operators who aim for competitive economic service to Farmers and Graziers.

### Competition.

Ground units with their unlimited rate of application and appealing maximum wetting of plant surface suiting some weed killers now in use, provide keen competition. Aircraft, on the other hand, of necessity favour a chemical concentrate in a finely divided state which gives high chemical deposit with little or no visible wetting effect and thus require appropriate formulations.

Where urgency and nature of terrain, whether of wetness and/or roughness, preclude the use of ground equipment, aircraft are the logical choice regardless of cost. When in direct competition with ground units the success of aircraft lies in their ability to speedily treat large areas within critical seasonal demands of a few days and without labour problems.

This comparison can be further divided into consideration of large and small areas to be treated. In the case of the latter, small landholders, when preservation of hard won limited working capital is of prime importance and speed, crop damage and convenience considered lesser evils it is found that low cost ground spray equipment prevails, farmers often being able to fabricate their own units.

On the other hand where a property or area is extensive and established and the nature of its management necessarily involves a considerable working expense outlay in cash per year, it has been found that aircraft are favoured. The self-contained nature of aerial weed control does not interfere with the normal function of the property's labour, etc. Crop damage by land vehicles assumes considerable proportions and is a definite deterrent, likewise the time and effort needed over and above aircraft in the keeping up of greater quantities of water to the ground units and their smaller acreage covered per day. The speed of application by aircraft can be positively controlled apart from weather, which affects both, by having one, two or more craft as the area warrants at no increased cost to the client. At present the speedy treatment of extensive areas and all inaccessible areas favour aircraft.

#### Rates of Application.

For maximum economy one gallon per acre is the ideal to be aimed for. An average rate of three gallons per acre allows adequate spray coverage with existing boom equipped aircraft and is presented to the farmers and graziers at a competitive figure. Up to six gallons per acre have been applied over considerable areas; an undesirable 10 gallons per acre is considered but at increased cost.

In the past unsound haste and economic pressure tempted some operators to apply insufficient prepared spray with disastrous results, and reflecting detrimentally on aerial application.

#### Suitable Spray Preparations.

Most weed killer preparations have been successfully applied from the air, but it is felt that their recommended volume of application favours ground units; with this in mind and with the ideal of an aerial application of finely divided chemical concentrates of one and up to three gallons per acre maximum an incorporated "striking agent" serving the dual purpose of checking evaporation and staying put on the plant in defiance of adverse weather would be immensely practical to the operator. It is hoped newly developed sequesterine agents will aid this.

As aircraft spray equipment generally circulates the prepared spray whilst ferrying to and during its application a non-foaming product is essential. Considerable difficulty and wastage is experienced in this direction at the present time. It can be appreciated that a harmful foam blowing straight back into the face of a pilot when flying at 6-10 feet above a crop of pasture at 70-80 m.p.h. is, to say the least, disconcerting.

Corrosion is the enemy of aircraft safety and costly from the maintenance angle, non-corrosive preparation being favoured.

### Aircraft.

The bulk of aerial spraying in this country is still carried out by Tiger Moth Aircraft, the standard basic trainer of the last war. Bought at disposal price, proving manoeuvrable and able to operate from small fields, these craft, fitted with a boom swung laterally beneath the lower wing and equal in span have coped effectively with most work in the past. Still regarded as necessary 21 years old in design, and limited to 35 gallons of liquid spray; these planes are gradually being superseded by higher payload aircraft such as DeHavilland Canadian Beaver, Cessna, and Austers to mention a few.

An American machine, the Cessna 180 Agricultural Aircraft, has been demonstrated recently to Australian Operators and both Victoria and South Australia, it is believed, have ordered them.

This craft, a modern high powered high wing all metal cabin aircraft has fitted the latest American positive control spray equipment. Two liquid spray wing tanks of 80 gallons total capacity feed twin rotors which revolve cylindrical brushes with holed centres. The liquid spray is gravitationally fed into these brushes and revolved at controlled speed by means of variable pitch rotors and aircraft speed. The rate of flow is also directly controlled.

The noteworthy feature of this equipment apart from dispensing with the conventional boom is that it gives positive control of droplet size. This droplet size factor and uniformity of density throughout the swathe widths have emerged in field trials as critical to successful and exact low volume aerial application of concentrated and finely divided chemical. This equipment with its positive nature is felt a step forward.

### Conclusion.

In conclusion, it can be said that aircraft are established applicators of weedicides generally to large areas which they treat effectively. As aerial weedkilling of smaller acreages is deemed necessary for economic utilization of agricultural aircraft and which can be competitively treated, a desirable optimum gallonage applied per acre of one to three gallons seems economically necessary and to this end closer collaboration between Research Worker, Manufacturer, and Operator is desirable to achieve suitable preparations. This collaboration it is felt will lend direction to future activity in this field and be of mutual benefit.