# FEDERAL AND STATE REGULATIONS

## 2,4-D Regulations Raise Aircraft Applicators' Ire

DAVIS, CALIF.—A three-way discussion is on in California among the Agricultural Aircraft Association, the California Bureau of Chemistry, and University of California agricultural specialists. The issue: a "10-gallon limitation" on aircraft application of 2,4-D. Aircraft applicators, university specialists, growers, and state bureau of chemistry representatives aired their views here in a day-long conference Nov. 12.

(The 10-gallon limitation, a regulation of country agricultural commissioners in rice-growing counties of California, says a minimum of 10 gallons of 2,4-D solution must be applied per acre. It is not a state regulation, but it was recommended to county commissioners by the state Bureau of Chemistry, which based its recommendation one made to growers by university agricultural specialists. The university recommendation to growers, made much as it would recommend proper amounts of fertilizer, is based on giving adequate coverage and, therefore, adequate weed kill.)

### *Fliers Seek Modification*

Here are points raised by some aircraft applicators, who would like to see the regulation changed: They are caught in an economic squeeze; they have used five to six gallons in the past and believe they got good kills; because of the volume of material that must be sprayed, they are frequently unable to complete a job during early morning hours when weather conditions are most favorable (halving gallonage, they say, would permit them to spray a given area in 60% of the time); spraying too late is, according to them, a main cause of damage to adjacent, susceptible crops.

University weed control specialists, who recommend 10 gallons to growers, readily acknowledge that lower gallonages might give satisfactory kills, but they are skeptical as to lower amounts being generally practical. Actually, many members of the association, according to figures presented by its president during the conference, use less than required gallonages (8.7 gallons on the average by those replying to an association survey). University men at the conference observed that a five-gallon limit could mean, therefore, three- and four-gallon applications. Commenting on economics, one farmer at the conference said it costs 60 to 90 cents more per acre to apply 10 gallons as compared to five gallons and that he is quite ready to pay that difference to get better protection.

Tied in with adequate coverage is spray drift damage. Spray drift damage, particularly serious in California where such a wide variety of crops grows, reached a crucial stage at one point in the past, and 2,4-D was nearly outlawed entirely. Such drastic action was forestalled, however, by designating certain areas of the state as hazardous where 2,4-D could not be applied during the growing season (generally March to September) except by special permit. A 10-gallon limit was thought by some county commissioners to be a means of reducing drift damage; applicators, they reasoned, would have to use larger nozzles to spray the required gallonage, and these larger nozzles would produce fewer small drops, principal cause of drift damage. Actually, applicators in some cases merely used more small nozzles, so regulations had to specify a minimum nozzle size as well as 10 gallons. And this, apparently, is a major point disliked by some applicators; they would prefer to see the 10-gallon limitation discarded and have a drop size limitation instead.

### *Regulation Difficult*

University men tell AG AND FOOD it is hard to know whether such a regulation is possible or not. First, they say, drop size is not so easily checked and would mean much more work for the Bureau of Chemistry. Secondly, the basic reason for a 10-gallon limit is adequate coverage and kill; their experience indicates that, while five gallons may do the job, more than five is frequently required, particularly in rice where some weeds are hard to kill.

Allen Lemmon, California Bureau of Chemistry chief, says several operators told him outside the meeting they hoped there would be no change in recommended procedure of requiring a minimum of 10 gallons per acre, as they believed it was an added safeguard.

Some of the difficulty with 2,4-D results from lack of precise knowledge on how sprays drift. Thus, spraying regulations are based primarily on general observations of damage caused. State officials, manufacturers, applicators, and growers are therefore watching work Norman Akesson and Wesley Yates, University of California (Davis), are doing to determine exact amounts of spray leaving treated areas and how far these sprays drift. Investigated will be effects of such variables as pressures, spray nozzle type and arrangement, type of flight pattern used by the applicator. Colored water sprays will be used instead of actual chemicals, and the study will be limited to physical characteristics of droplets, where and how they travel.

### *Research Studies*

Earlier, Akesson and Yates have found there is little drift in the direction the plane travels. They determined this by tracing flight patterns of hydrogen-filled ballons (such ballons can be adjusted to eliminate gravitational effects) released from planes simulating spraying runs. Most of the currents, they found, are laterally outward and upward and are caused by vortexes set up by the plane's wing tips. Present thought is that these currents carry aerosol-size drops to heights of 40 to 50 feet where they are easily picked up by area air currents and moved long distances.

Meanwhile, the 10-gallon limit remains. While the Bureau of Chemistry has taken no action yet, it is possible that hearings will be held to determine if other specifications—such as nozzle size, arrangement, or pressure—might replace it. Only hearing scheduled so far, however, is one on an application of grain growers in parts of Sacramento and San Joaquin Counties to have their regions removed from the hazardous designation, thus permitting 2,4-D spraying by aircraft during summer months.

Meanwhile, California is not the only state having 2,4-D problems. In Washington, wheat fields are major benefitees, biggest difficulty has been with vineyards. This year, aerial application was prohibited in parts of the Yakima Valley, and use of salts and low volatile esters was permitted by ground rig only under special conditions. Washington weed control specialist Auburn Norris, Yakima, tells us Washington's law became effective too late this year and that they do not know how effective these regulations were. Regulations expire December 31 and hearings will be held in Washington the latter part of December to review 1953 operations. Then, early in January hearings will be held to determine what to do for 1954, particularly with respect to the high volatile types of 2,4-D.