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TECHNICAL DEFOLIANT PROBLEMS

The following technical problems primarily involve the defoliant agent itself, but if solved would greatly enhance the defoliation effort:

1. Bulk, Weight and Cost. Agents now in use in SEA weigh between 10 and 11 pounds per gallon and to be effective require, on the average, 3 gallons per acre deposition rate at a cost of \$5-9/gal.

2. Lack of a "super" agent. Presently there are three agents in SEA, ORANGE (2,4-D/2,4,5-T), BLUE (Cacodylic Acid) and WHITE (Dow's Tordon and 2,4 Damine). All of these agents require deposition rates of 1 gallon to 5 gallons per acre depending on the target. Flow rates vary among agents due to differences in viscosity, further complicating delivery problems. To be effective against rice, 1/2 to 1 gallon per acre of BLUE is required but when used as a general defoliant, 3 gallons per acre is required. All of the above agents are not effective on the entire spectrum of plant species in SEA. The agents will defoliate and kill many of the plant species but some species will be defoliated but not killed; therefore, regrowth occurs 4-8 months after spraying. The present use of three different agents also present logistic and ground handling problems.

3. Lag time between spray application and effect. Presently with ORANGE AND BLUE 3 to 6 days is required before a "burn" is evident and can be seen from the air. With agent WHITE, several weeks is required for this stage of defoliation. After this has occurred, usually a month or more is required before leaf drop or actual "defoliation" is complete. As a result of this lag in time,

two problems are evident:

a. Lack of ability with the present agents to ascertain swath coverage immediately after making a spray pass. Numerous marking techniques have been tried to accomplish this which include laying down white paint at the rate of 10 gal/A, marking with smoke bombs, balloons, etc., all with negative results.

b. The other problem is a field commander cannot defoliate an enemy held area fast enough to expose the enemy. Defoliation presently acts to expose an area over a long period of time, thereby denying future use of the cover by the enemy.

4. Tendency of agents to drift away from target area to friendly areas. To obtain optimum swath width, area coverage, and efficient use of agent, droplets of 100 to 500 microns are desired. However, if one applies Stokes Law to a droplet this size in a 8-10 knot cross-wind, it is evident that unwanted drift is a problem. To complicate matters, any method which has been presented to the Air Force as means of controlling drift has also increased the viscosity of the liquid thereby making the hardware and the agent incompatible, and decreased the swath width and concentration of the agent per gallon.