

# Performance Evaluation of Hexacopter UAV (ANGRAU-PUSHPAK) Spraying for Management of Chilli Aphids, *Myzus Persicae* (Sulz.)

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## ABSTRACT

Unmanned aerial vehicle (UAV) sprayers have exceptional potential to revolutionize the Indian agriculture to ensure sustainable national food and nutritional security by efficiently performing the crop protection activities with precision in very short time. The present was study aimed at evaluating efficacy of UAV spraying in managing chilli aphids, *Myzus persicae*. The experiment was conducted at operational research project (ORP) site at Lam village of Guntur District, Andhra Pradesh during *kharif* 2021-22 and *kharif*, 2022-23 with restricted randomized block design (RRBD). The treatments imposed are based on the recommended doses of pesticides issued by Central Insecticide Board and Registration Committee (CIB and RC), Govt. of India for the evaluation. RRBD was imposed with five treatments and four replications with 100%, 75% and 50% RDP with UAV sprayer and 100% RDP with human backpack sprayer and a control plot with only water spraying with UAV sprayer for asserting the efficacy of UAV spraying when sprayed at low volume spraying (25 L per ha)) Pre and post spraying (5 days after spraying) data was collected. The first spray to control chilli aphids was carried out 54 DAT (Days after transplant) with Spirotetramat 15.3 % w/w OD with 100% RDP (T1), 75% RDP (T2), 50% RDP (T3) with drone and 100% RDP with human back pack sprayer (T4) and control (T5). The pre count was 34.5 – 36.25 per 10 cm twig and post count data reduced number of aphids per 10 cm twig from 34.5 to 18.75, 35.25 to 21.0, 35.5 to 21.5, 36.25 to 24.25, 34.75 to 35.25 acrds the treatments respectively with a percent reduction over control of 46.19, 40.86, 33.34 and 40.33 respectively in 2021 and 44.74, 37.09, 27.08, 35.03 respectively acards the treatments during 2022. The second spray was carried out at 61 DAT with Fipronil 5% SC. The pre and post spraying (5 days after spraying) data analysis revealed that in T1, T2, T3, T4 and T5 the percent reduction over control was 83.19, 78.58, 59.79 and 78.27, respectively during 2021 and 86.05%, 82.05%, 67.45%, 80.21% reduction over control respectively during 2022. The drone spray fluid volume of 25 L ha<sup>-1</sup> was found efficient without affecting the bio-efficacy instead of 500 L.ha<sup>-1</sup> used in human back pack spray technology. Drone spraying technology offers 95% reduction in water use for plant protection. The recommended doses for UAV spraying of Spirotetramat 15.3 % w/w OD is 120 ml acre<sup>-1</sup> and Fipronil 5% SC is 300 ml acre<sup>-1</sup> to control aphids in chilli which saves 25% cost of plant protection for aphids in chilli.

**Key Words:** *Chilli, Hexacopter, Myzus persicae, Spirotetramat and UAV sprayer.*