ANALYSIS OF THE OPTIMUM SPRAYING DISTRIBUTION LENGTH OF DROPLET POINTS ON AGRI DRONE SPRAYING SYSTEM FOR PRECISION AGRICULTURE

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ABSTRACT

Precision agriculture has become important because of its potential and applications including smart irrigation, agricultural robotics, remote sensing and mapping. Using drones in smart agriculture generally makes farming more precise, but it can also help people farm smarter in terms of pesticide use on farmland. Pesticides are important to eliminate plant pests and maintain good yields in agricultural land. Unmanned aerial vehicle (UAV) variable rate spraying offers a precise and adaptable alternative strategy to overcome this challenge. In this article, the optimal range for droplet distribution length and factors affecting droplet distribution length distribution have been analysed. For that, the Agri XP25 drone sprayer model was used in this study. The droplet distribution length was measured and recorded at different flying heights of 0.5m, 1m, 2m and 3m. In this study it was found that different flying heights have a significant influence on the length of droplet distribution during drone spraying. In particular, when flying at a higher altitude, the droplet distribution tends to be smaller, while lower altitude leads to a larger droplet distribution. Droplet distribution length may vary depending on factors such as wind gust, nozzle configuration and spray solution. Taking into account the configuration of the device in good setting condition, this study found that the Agri XP25 Drone is able to provide the optimal droplet distribution length at a distance of 4m at each height even in windy weather conditions. The conclusion of this research provides valuable guidance for drone operators and agricultural practitioners. It's emphasized the importance of considering spray testing on each spraying drone to find out the optimal droplet distribution length in order to increase agricultural production.

TABLE OF CONTENTS