

Design and Development of Drone Sprayer for Agricultural Applications

The project titled **“Design and Development of Drone Sprayer for Agricultural Applications”** submitted by Group Members (LALIT SHARMA, ABHISHEK RAWAT, MUBASSRIN, LAXMI, KHUSHBOO, KAVYA BHATNAGAR, ADITYA SINGH NEGI, DEVANSHU, HIMANSHU, SURAJ SAGAR, PRABAL, MAHAVEER, RICKY GARIYA, TUSHAR BHATNAGAR) focuses on utilizing unmanned aerial vehicle (UAV) technology to improve the efficiency, safety, and effectiveness of spraying pesticides, fertilizers, and other agrochemicals on farmlands.

This drone-based system is designed to reduce the dependency on manual labor, minimize human exposure to harmful chemicals, and ensure uniform application over large and uneven fields. The drone is equipped with a spraying mechanism, GPS for precision navigation, and a controller for automated or manual operation.

Key components of the project include:

- Lightweight and durable drone frame
- Efficient propulsion system (BLDC motors and ESCs)
- Microcontroller (e.g., Arduino or flight controller)
- Pump and nozzle system for even chemical spray
- GPS and sensors for precision targeting and altitude control

The project demonstrated how drone technology can significantly reduce time and resources while increasing productivity and safety in agriculture. Field trials showed improved spraying efficiency, reduced chemical wastage, and better coverage in hard-to reach areas. The modular design also allows for future upgrades and scalability.

The Drone Sprayer Project showcases the potential of combining engineering, automation, and agricultural science to develop sustainable farming solutions. This innovation addresses several modern-day farming challenges, including labour shortages, health hazards from manual spraying, and the need for precise agricultural practices.

In conclusion, this drone sprayer represents a step forward in smart farming and precision agriculture. It has the potential to be widely adopted, especially in regions where traditional spraying methods are less efficient or hazardous.







