Requirements Description: American Made Unmanned Aerial Vehicle/Sprayer

General Information

1.0 Scope

Our station requires a professional-grade unmanned aerial vehicle (UAV) capable of supporting spraying/spreading. The agricultural drone system (NDAA compliant) must provide fully autonomous, high-capacity platform designed to apply liquid spray and granular materials (e.g. fertilizer/seed) with precision and minimal drift. It must have flow control and a granular spreader attachments to deliver accurate coverage across fields. The platform be built and supported in the United States. This drone will allow for research that will help farmers reduce input costs while improving application accuracy and operational flexibility.

2.0 Background

Our research station already takes part in unmanned aerial vehicle (UAV) remote sensing research as well as robotics research for precision agriculture. The aim in obtaining this UAV platform is to allow us to conduct research surrounding aerial-based management (e.g. spraying/broadcasting of seed/fertilizers). The improvement of aerial-based management has the potential to increase profitability and efficiency of farmers.

3.0 Specifications

The proposed unmanned aerial application system shall meet or exceed the following minimum technical specifications. Vendors must provide documentation demonstrating compliance with each requirement.

Payload and Tank Capacity

The system shall support a minimum lift capacity of 250 lbs.

The onboard tank shall accommodate at least 30 gallons of liquid or ~~50~~ **45** gallons of solid material.

Productivity and Application Performance

The system shall be capable of treating up to 150 acres per hour at 2 GPA for liquid applications.

The system shall be capable of treating up to 250 acres per hour at 20 lbs/acre for solid applications.

The maximum application rate shall be:

Up to 8 GPM using hydraulic nozzles

Up to 16 GPM using atomizer systems

Up to 80 lbs/min for solid material distribution

Swath Width and Spread Distance

The system shall provide a minimum swath width of 50 ft for both liquid and solid applications, subject to material characteristics.

Obstacle Avoidance

The system shall include a true 360-degree millimeter-wave radar obstacle avoidance system.

Material Monitoring and Telemetry

The system shall include an integrated real-time material monitoring system capable of tracking:

Liquid/solid tank weight

Flow rates

Remaining payload

Additional tank diagnostics

Imaging and FPV
The system shall provide a first-person-view (FPV) live video feed for operational awareness.

Software Requirements
The system shall include a lifetime license to a ground control software platform, providing mission planning, telemetry, and operational control.

Training Requirements
The vendor shall provide comprehensive training materials, including: Full operational and maintenance manuals,
Simulation-based training modules or equivalent instructional program

Shipping and Delivery
The system shall be shipped fully assembled.

Regulatory Support
Vendor shall provide FAA documentation assistance and regulatory consulting, including support for applicable waivers, exemptions, or operational approvals.

Warranty
The system shall include a minimum one-year manufacturer warranty covering defects in materials and workmanship.

4.0 Shipping / Place of Performance
808 E. Blackland Road
Temple, TX 76502

5.0 Deliverables / Schedule
The vendor shall provide 60 days ARO:
· UAV airframe
· First Person View Camera System
· FAA Regulatory Onboarding
· Obstacle Avoidance System
· Toolkit
· Ground Link Controller
· Battery Charger
· Six (6) batteries
· ≥30 Gallon Tank Liquid Sprayer System
· ≥~~50~~ **45** Gallon Tank Spreader System

6.0 Travel
N/A