R&C Drone AgSpray
Business Plan

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Executive Summary

R&C Drone AgSpray was established in 2022 and provided spraying and spreading services for small acreages to large farming operations through agricultural spraying and spreading drones. Our services include various chemical and seeding applications for all sizes of operations. Our goal is to increase efficiencies and decrease the environmental impact of agriculture through the broader adoption of agriculture drones.

Customers

Our customers range from small acreage owners and local municipalities to crop and livestock producers. Ensuring customer satisfaction is our top priority. We have received very positive feedback so far and have many satisfied customers.

Project Proposal/Goal

R&C Drone AgSpray wants to expand its commercial spraying operation by adding two more drones to better serve our customers and community. If we receive this grant, we could sell our oldest drone (DJI T30), which a DJI T40 would replace. Our T30 typically covers between 20-25 acres per hour. When using the T40, we usually cover between 35-40 acres per hour. Replacing the T30 with a T40 and adding a third T40 to our operation, we hope to cover at least twice as many acres as we sprayed last year, about 5000 acres.

With the growing demand, we aim to provide our customers and operations with a sustainable future through the reduced water usage of agricultural drones and the capability to spread cover crops to help improve soil health and nutrient management.

Our Timeline

Upon receipt of the grant, we would purchase two more drones and the related equipment and start building a new spraying trailer. Then, we would register the drones and add them to our Part 137 license. Our next step would be hiring and training pilots to fly these

drones. Getting pilots trained to ensure the safe operation of drones is an essential part of our business. After our pilots are trained and drones registered, we would start with some in-field training of the pilots where Randy, our chief pilot, or Beau, our second most experienced pilot, would take the new pilots to work alongside them if real-world conditions and learn the ins and outs of spraying with agricultural drones. Some potential challenges we face as applicators looking into the upcoming year are as follows. Weather conditions play a significant role, as we can't fly in certain conditions, such as high winds and excessive heat. Commodity prices are also lower than in recent years, which causes some growers to cut back on applications throughout the growing season. We are trying to offset these challenges by adding additional drones and pilots to increase productivity during favorable weather conditions. Adding the two drones does increase our overhead costs. If we receive the grant money, we could discount our services if needed and pass the savings on to the customer.

Sustainability

Our goal for sustainability over the next five years is to keep adding to our operation and enhancing the pilots' experience to improve the efficiency of the operation. Performing preventative maintenance on the drone and ensuring the quality of pilots should reduce the drone's in-season maintenance and repair costs. We have a plan for compensating the pilots well with incentives for safe and efficient flying on top of their regular hourly wage. Communicating with customers after a job is completed and ensuring they are satisfied with our work is very important to us so we can continue having returning customers.

Additionally, we conduct various trials to test different chemicals, application rates, and timing of applications to determine the most cost-effective time to apply. These tests are crucial to the growth of our business. We were one of the first companies in the area offering spraying and spreading services, so many people look to us for guidance on what does and does not work because of our extensive ag background and being known for leading the way in cutting-edge technologies.

Project Budget

Product	Quantity	Price	Total Price
DJI Agras T40	2	$19,999.00	$39,998.00
T40 Intelligent Flight Battery	8	$2,499.00	$19,992.00
Intelligent Battery Charging Station	2	$1,549.00	$3,098.00
T40 Spreading Tank	2	$1,399.00	$2,798.00
30 KW Deisel Generator	1	$10,000.00	$10,000.00
Custom Cooling Station	2	$600.00	$1,200.00
Charging Cable	2	$255.00	$510.00
WB37 Battery	4	$75.00	$300.00
WB37 Charging Hub	2	$84.99	$169.98
DJI Relay	2	$1,050.00	$2,100.00
Dura Products Direct Inject	1	$8,274.00	$8,274.00
Dura Products Auto Batch	1	$1,475.00	$1,475.00
200-Gal Cone Tank and Stand	2	$700.00	$1,400.00
Dultmeier Induction Cone	1	$1,002.00	$1,002.00
Mixing Plumbing	1	$1,665.29	$1,665.29
Operator Station	1	$1,065.24	$1,065.24
125-Gal Bulk Chemical Tanks	4	$125.00	$500.00
Trailer Deck	1	$2,500.00	$2,500.00

H&H Trailer (Purchased 2023)	1	$10,250.00	$10,250.00
Ram 5500(Purchased 2023)	1	$55,000	$55,000
Fungicide/ Insecticide and Foliar Feed	1	$95,000	$95,000
Chemman Software	1	$995.00	$995.00
Total			$259,292.51

- The DJI Agras T40 is the drone we currently use; it has a 10.5-gallon tank and can cover 40 acres an hour.
- It uses the DJI intelligent flight 56-volt 30 amp-hour battery, providing about 12 minutes of loaded flight time. We require four per drone for continuous all-day operation.
- The DJI intelligent battery station is used to charge the batteries.
- Each T40 comes with a dry spreading tank, which we plan to use for dry fertilizer and cover crop spreading.
- The 30 KW diesel generator will power our battery chargers, pumps, and other mixing equipment.
- The custom cooling station is used to keep batteries cooled while charging to help extend the battery's life expectancy and prevent overheating issues due to the high current draw that occurs during the use of these spray drones.
- The charging cable is a custom cable used to fast charge these drone batteries for uninterrupted all-day operation.
- WB37 batteries and charging hub are the external batteries for the remote that allow us to fly all day.
- The DJI Relay is a signal repeater to help maintain connections when the topography and distance cause drone connection to the remote to become weak.
- The Dura Products Direct Inject system of pumps and flow meters that we would use to automate our mixing process to reduce potential chemical exposure to the operators and reduce mixing errors.

- The Dura Products Auto Batch is another pump and flow meter we use to automate the mixing process's water portion to reduce potential errors.
- Our 200-gallon cone tank and stands will be used to mix up to 200-gallon batches at the spraying sites. These large tanks help speed up productivity and reduce potential chemical exposure from repeated mixing of smaller batches.
- The Dultmeier Induction Cone will be used in on-farm trials with our customers to help them learn which products and treatments have the best ROI for their operation.
- The mixing plumbing components will include an assortment of the necessary hoses, fittings, and a distribution pump to mix and dispense our chemicals to the drone.
- Our operator station includes a shade canopy and seating for operators to reduce fatigue and remote and tool storage to maximize efficiency during spraying operations. There is also onboard weatherproof storage for battery chargers and batteries during transport.
- The 125-gallon bulk chemical tanks will be used instead of traditional two-and-a-half-gallon jugs. These bulk tanks help reduce potential exposure to chemicals and speed up our mixing process through a closed automated system using the Dura Products Direct Inject mentioned above.
- The trailer deck is an elevated platform built above the standard trailer deck where we will be conducting our spraying operations. The elevated deck provides better visibility of the drone to ensure safe and efficient flying.
- Our H&H bumper-pull trailer is a standard 24-foot trailer on which our trailer deck will be built. This trailer gives us adequate space for all of our mixing equipment.
- The Ram 5500 pickup is what we will pull the trailer with and carry the 30 KW generator on the bed.
- The fungicide, insecticide, and foliar feed are the bulk of what we apply during the year. We purchased these products in bulk to utilize our 125-gallon bulk chemical tanks to aid in mixing efficiency and reduce potential chemical exposures.
- Our Chemman Software is used to keep track of spray records for state regulatory agencies, along with the invoicing side of our spraying operation.
- Our total budget for this project will be $259,292.51.

We are requesting $34,178.00 from the Pro Ag Grant, which would cover the cost of one DJI Agras T40, four DJI intelligent flight batteries, one DJI intelligent battery charging station, one T40 spreading tank, two WB37 batteries, one WB37 charging hub, one DJI Relay. This equipment is necessary to help increase our productivity and maximize the potential of our business. This equipment totals out to $34,178.00.

Financial Projections

This previous year, we covered roughly 5000 acres with our T30 and T40, averaging $14 per acre. With our goal of reaching 10,000 acres at $14 per acre, we plan to gross $140,000 in application revenue. Our goal of 10,000 acres is reachable because we currently have 5000 acres pre-booked for the season and other jobs for local municipalities. Over the past two years of business, most of our jobs were picked up in the season, so we do not have any concerns about reaching our goal, with half of the acres already pre-booked. Also, over the past two years of spraying, we have had to turn away between 1,500 and 2,000 acres throughout the season each year simply because we could not get to our customers on time. These additional drones, equipment, and pilots are essential to us meeting this goal. This year, we are adding chemical and fertilizer sales to our operation with a margin of about 20% between chemical and fertilizer sales. We have pre-purchased approximately 40% of the year's necessary chemicals, amounting to around $40,000, for fungicide, insecticide, and foliar fertilizer. We plan to sell 75% of the chemicals that we apply. Considering the potential increase in production by adding two more T40s to the operation, we have been exploring purchasing more chemicals and fertilizers. If granted these funds, we intend to acquire approximately $90,000-$100,000 worth of chemicals and fertilizers, covering about 7500 acres. This would bring our total gross revenue from application and chemical sales to approximately $252,500-$262,500.

Projected Yearly Operating Expenses	Price
Insurance (3 Drones)	$14,250
Payroll Costs	$25,000
Fuel	$4,000
Chemical/ Fertilizer	$95,000
Maintenance and Repairs	$2,500
Advertising	$1,500
Registration of Pickup and Trailer	$1,200
Bank Loan ($70,000, 3 Year Term, 8% Interest)	$26,400/ Year
Other Operating Expenses (not Chemical or Bank loan listed in project Budget)	$28,875
Tax Prep Fees	$450

Our projected expenses are as follows:

- Insurance expense on three drones is $14,250 per year, which includes chemical liability for spray drift and in-flight liability coverage.
- Payroll expenses are estimated to cost $20,000 hourly for our pilots based on last year's labor costs of $10,000 over 5,000 acres, with $5,000 in potential bonuses. The potential bonuses mentioned previously are to incentivize our pilots to fly safely, hopefully resulting in minimal repair costs.
- Based on last year's fuel usage of under $2,000, we expect to use about $4,000 this upcoming year.
- With the receipt of this grant, we plan to buy a total of about $95,000 in chemicals, as we would sell 75% of the chemicals and fertilizers we apply.

- Due to primarily using newer equipment, our maintenance costs are projected to be reasonably low. Most of the projected repair costs are from potential accidents where the drone requires some repair. With our prior years of experience in spraying, our in-season repairs over the last two years have totaled less than $2,500. However, with the addition of less experienced pilots, we understand that there is a potential for accidents to occur.
- We use advertising on our local radio stations to grow our business and have seen positive results.
- We pay roughly $1,200 yearly to register the pickup and trailer we use for our operation.
- The projected yearly payments on a $70,000 3-year term at 8% interest for the drones and related accessories would be about $26,400 annually.
- Based on previous years, our tax preparation is roughly $450.
- Based on an estimated average gross revenue of $257,500, our net profit is projected to be $58,325 after all our yearly expenses.

Cost Benefit Analysis

A net profit of $58,325 would make our ROI for year one roughly 30%. Assuming all our revenue and costs are the same for years two and three, and we have the same equipment, our year two and three ROI will be around 60% annually. For years four and five, after the bank loan is paid off, our ROI would be about 96% annually.