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# DRÖN AIR



*SPRAYING DONE RIGHT.*

## Introduction

Over the past 20 years, US wine consumption grew by one gallon per resident for a total of 966 million gallons. To meet this increased demand, California's total winegrape production increased by 130,000 acres or 20% during this time.<sup>14</sup> While increasing production, growers strove for efficiency and reduced environmental impact within their operations.

Bird's Eye Technologies, a company headquartered in Swedesburg, Iowa specializing in aerial technology for the agriculture industry, will launch DrönAir, a unique agricultural drone or unmanned aerial vehicle. Opening a new location in Stockton, California, Bird's Eye Technologies will introduce DrönAir to the California winegrape industry.

DrönAir is a cutting-edge, autonomous drone that applies chemicals and fertilizers precisely as well as spread biological controls or seeds. Field data can be uploaded into the DrönAir app to program and direct the drone to autonomously cover specific areas that need it. DrönAir's proprietary equipment and app, coupled with the use of electrostatic technology, makes spraying more efficient, precise, and cost-effective while reducing the applicator's exposure to harmful substances, decreasing health risks.

## Electrostatic Technology

Electrostatic spraying negatively charges liquids as it passes through the nozzle. Sprayed droplets are attracted to positively charged surfaces, such as leaves, and repel each other creating more equal coverage.

## Market Analysis

### Industry Trends

California is the nation's largest winegrape producer by total area and value. Winegrape production spreads across 637,000 acres in California, accounting for approximately 85% of the total US acres and over \$3.6 billion in total value.<sup>1</sup> California winegrapes are grown in a variety of regions, each one is unique in terrain, soil type, quality, etc. Winegrapes grown in the state can sell from \$800 to \$8,000 per ton<sup>7</sup> and come from coastal vineyards as small as a few acres or from central California vineyards as large as a few thousand acres.<sup>1</sup>

Nonetheless, grapes are a perennial crop that takes roughly 3 years to reach full production and maintains a 20 to 30-year productive life.<sup>13</sup> If destroyed by pests, disease or weather in an early year, future profits vanish making pesticide

### Licensure Process<sup>6, 12</sup>

Applicators must meet Federal Aviation Administration (FAA) requirements and California Department of Pesticide Regulation (DPR) to apply chemical using a drone in California.

1

#### FAA Requirements

- Part 107 - Remote Pilot Certification
- Section 44807 - Additional Waivers
- Part 137 - Agricultural Aircraft Operator Certificate

2

#### CA DPR Requirements

Unmanned Pest Control Aircraft Pilot Certification includes two levels:

##### Apprentice

- Meet all FAA requirements
- Take exam

##### Journeyman

- Full year of apprentice program
- Complete 50 hours of flight supervised by a Journeyman
- Take exam

application a necessary practice.<sup>1</sup> Each year, approximately 27.3 million pounds of pesticides are applied to winegrapes.<sup>7</sup> Prior to application, a grower must seek recommendations from a pest control advisor (PCA), an individual specifically licensed and trained on pest control options.<sup>2</sup> A PCA can be an employee of a vineyard or work for a vineyard management or chemical company. Vineyards with 500 or more acres tend to hire their own PCA while smaller vineyards utilize an external PCA through their vineyard management company.<sup>9</sup>

Recently, California has pushed for safer alternatives and means for application as exposure concerns for applicators grow.<sup>8</sup> Since 2002, roughly 1,600 vineyards farming 70% of all winegrape acres have signed up for the Certified Sustainable program offered by the California Sustainable Winegrowing Alliance (CSWA), a program that works with growers to incorporate economically, environmentally, and socially sustainable practices into their operations.<sup>4</sup> The CSWA encourages vineyards to use electrostatic sprayers and spot treatments when possible. As of 2015, 14% of all CSWA certified sustainable vineyard acres use such methods.<sup>3</sup>

Growers can improve operational sustainability and efficiency by adopting new technologies. The acceptance of technology has increased over recent years due to labor shortages<sup>10</sup> which will only continue to grow as nearly 25% of pesticide applicators are over the age of 55.<sup>5</sup> Drones represent one form of technology with the capability to address both labor and efficiency needs as they use less labor, move quicker, and can enter the field when and where ground equipment cannot.

Growers cited terrain and time constraints as two of the biggest challenges when spraying and stated accuracy, safety, and cost as major factors in their decisions.<sup>9</sup> Additionally, electrostatic spraying can reduce chemical usage by up to 25% without decreasing efficacy.<sup>4</sup>

However, one current limitation of drone adoption is federal and state regulations. In addition to meeting the Federal Aviation Administration (FAA) requirements, the California Department of Pesticide Regulation (CDPR) requires special training for pesticide applicators using drone technology.

## Market Potential

DrönAir's market consists of California winegrape vineyards striving for more sustainable and efficient chemical or fertilizer application. With 9,555 vineyards and 94% of California's winegrape acres, DrönAir's potential lies specifically in the North Coast, Central Coast, North San Joaquin Valley, and South San Joaquin Valley regions.<sup>11</sup>

Vineyards in these four regions vary in size, needs, and how they are operated.

The North and Central Coast regions have roughly 5,600 vineyards, averaging 42 acres



## Market Potential (continued)

per vineyard driven by terrain and high per-acre costs. Due to size and ownership, these vineyards tend to hire a vineyard management company (VMC) for some or all of their operational needs. The 3,946 North and South San Joaquin Valley vineyards are larger in size, averaging 150 acres per vineyard due to flatter terrain and lower per-acre land cost.<sup>11</sup> These regions have an estimated market potential of \$47.7 million in sales.

## Target Market

DrönAir will market to large growers and VMCs. Targeted growers own 500+ acres and are located in the North and South San Joaquin Valley regions, where over 50% of all acres are owned by vineyards of this size.<sup>1</sup> VMCs managing over 500 acres will also be targeted. Roughly 85% of all VMCs are located in the North and Central Coast and average 25 clients.<sup>9</sup> In year 1, DrönAir will target the North and Central Coast regions, emphasizing on VMCs. In years 2 and 3, sales will expand to the North and South San Joaquin Valley regions, shifting emphasis to growers.

Year	Targeted Regions (Additions by Year)	No. of Vineyards	No. of VMC's	No. of Leased Units	Market Share
1	North & Central Coasts	25	4	29	6%
2	North San Joaquin Valley	56	19	74	9%
3	South San Joaquin Valley	79	65	144	13%

## Benefit to the Producer

DrönAir reduces chemical usage, improves sustainability and increases efficiency while saving the grower time and money.

## Customer Profile



### Balletto Vineyards

- Located in Santa Rosa County, North San Joaquin Region
- Owns 800 acres over 20 locations
- Challenges include timely pesticide application, weather, and safety
- Values innovation and strives to be environmentally sustainable
- Spends ~3,000 hours spraying per year
- Looks to magazines, tradeshow and University Extension for new practices
- Would benefit from the ability to spray in less than favorable conditions

### Coastal Vit

- Manages 21 client vineyards, ranging from 25-400 acres, for a total of 1,600 acres within North San Joaquin Valley
- Employs a full team of PCAs, pesticide applicators, and other industry experts to serve client needs
- Currently uses ATV and tractor sprayers to apply chemical
- Seeks technologies to improve efficiency, cover a variety of terrains and is easily transportable



## Competitor Profile

Traditional application methods are limited to ground transportation, restricting the ability to apply based on terrain, weather, etc. Most use tractor-pulled sprayers, but these are costly, lack precision, and can present environmental risks such as compaction. Other competitors, such as ATV's with a sprayer or backpack sprayers, can be more precise, but are time-consuming, require skilled labor, and increase health risks.

Currently, only a few drone-based sprayers exist; however, most are not able to cover as many acres as DrönAir. The one exception is Yamaha's Fazer R, weighing more than 55 pounds and therefore requires the operator to also have a pilot's license. DrönAir, weighing less than 55 pounds, is able to spray more acres, through electrostatic spraying and component upgrades, in a timely manner while reducing applicator risk and environmental impact.

Traditional	Payload Size (lb)	Speed (Acre/Hr)	Human Risk	Usage	Additional Licensing*		Average Price
					F/C	CP	
Tractor	2,204	20	High	Mass coverage			\$ 257,350
ATV	1,750	6	High	Mass coverage; Manual spot spraying			\$11,100
Backpack	8	1	High	Manual spot spraying			\$125
Drone	Payload	Speed	Risk	Usage	F/C	CP	Average Price
DrönAir	25	20	Minimal	Spot spraying	X		\$22,000/yr1; \$5,000/yr
Yamaha FR	71	2	Low	Mass coverage	X	X	\$108,355
Other <55 lb	11	15	Low	Spot spraying	X		\$3,700

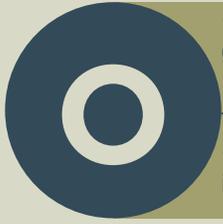
\*All require a pesticide applicator's license issued by CDPR. F/C: FAA & CDPR UAS Licenses. CP: Commercial Pilots License.



- First-to-market in the CA viticulture industry, backed by experience in the Midwest
- Saves grower time, material, and labor costs with autonomy and electrostatic spraying
- Leasing alleviates repair costs, simplifies licensing and ensures up-to-date technology



- Limited brand awareness and product knowledge
- Hesitation by growers to invest in drone technology
- Limitations of battery life and tank size, slowing down application



- Consumer push for sustainability encourages growers to seek new practices
- Agriculture industry is investing in more technology, especially those focused on labor
- Potential to expand beyond viticulture industry



- Barriers to adoption due to current federal and state requirements and timeframe
- Need for wider spraying coverage to meet grower needs
- Potential for increased competition from other drone-based companies

## Business Proposition Strategy Statement

DrönAir will provide California vineyards and VMCs with an efficient, cost-effective way to spray their vineyards utilizing autonomous, precision technology, decreasing chemical usage.

### Product Description

DrönAir will be sold in a package which includes: a DJI Agras MG-1P drone with DrönAir component upgrades, a liquid tank, a spreader tank, four batteries, a charger, enrollment in DrönAir Flight School training program, access to the DrönAir app, and customer service and support. DrönAir’s application capabilities range from liquid to granular applications as well as biological controls and seeds.

### Key Planning Assumptions

1. California will continue to lead in US winegrape production.
2. Consumers will continue to demand sustainable products, therefore, encouraging growers to adopt economically and environmentally sustainable practices.
3. Labor shortages will continue to affect winegrape operations and growers will seek new technologies to address this issue.
4. Use of drones for pesticide application will continue to require licensure by the FAA and CDPR.
5. DrönAir understands agriculture and will be able to keep up with industry demands.

### Goals & Objectives

1. Reach \$1.75 million in gross sales by the end of year 3.
2. Reach 12% market share by the end of year 3.
3. Maintain 98% customer satisfaction while striving for 100%.

## Action Plan Product & Positioning

DrönAir offers autonomous, drone spraying technology to winegrape growers and VMCs who are looking for a more efficient way to apply pesticides and other applications to vineyards while reducing labor and cutting costs.



### Price

Bird’s Eye Technologies offers DrönAir through a leasing program at a price of \$22,000 in the first year and \$5,000 per following year for a 3-year term. The leasing program provides the grower with the DrönAir package, licensure support, periodic technology upgrades, and technical support.

### Place

Bird’s Eye Technologies will open a second location in Stockton, California for direct sales to winegrape growers and VMCs managing 500 or more acres in four California regions: North Coast, Central Coast, North San Joaquin Valley, and South San Joaquin Valley.

### Promotions

#### Sales & Support Team

**Sales Representatives:** Sales representatives will be hired in all three years to establish connections with customers and maintain satisfaction. During year 1, DrönAir will hire one sales representative to cover the North and Central Coast regions, respectively. In year 2, DrönAir will hire one more representative to cover the North San Joaquin Valley and in year 3, another for the South San Joaquin Valley. These representatives will be in charge of introducing the product to potential customers as well as guiding them through the steps and processes.

**Technicians:** Technicians will provide customers with technical support including education on product components, upgrades, and troubleshooting. A total of three technicians will be hired by the end of year 3.

**Marketing Manager:** DrönAir will cost-share one marketing manager with Bird’s Eye Technologies’ other products to strategically create and implement tactics for the California market.

**Customer Training Specialist:** One customer training specialists will be cost-sharexd with Bird’s Eye Technologies to train customers on DrönAir and needed regulation information.

## Taking Flight Campaign

**Focus:** Increase brand awareness and generate sales

**Magazine:** Quarterly, half-page advertisements will be placed into the California Association of Winegrape Growers *The Crush* print and digital magazine all 3 years.

**Regional Winegrower Association Sponsorships:**

DrönAir will become a sponsor for select regional winegrower associations throughout the three years. Sponsorship of these associations will give DrönAir visibility to members through digital and print communications put out by each association.

**Direct Mail:** DrönAir will send out direct mail six times per year to prospective and current customers informing them of events and opportunities to engage with DrönAir.

**Website:** DrönAir will host a page on Bird's Eye Technologies company website specifically targeted towards the California winegrape market. This website will be a space for visitors to learn about DrönAir and upcoming events. Additionally, it will feature testimonials and subscriptions for e-newsletters.

**Social Media:** DrönAir will use Facebook, Twitter, and Youtube to engage with winegrape growers and VMCs. Short videos will be posted showcasing DrönAir and to educate viewers. Current customers will be encouraged to post their own videos of DrönAir and telling their story as part of the #TakingFlight campaign.

**Central Coast Grape Expo:**

DrönAir will attend the Central Coast Grape Expo in years 1 and 3 to specifically target winegrape growers and VMCs. Prior to the expo in year 1, DrönAir will reach out to media contacts inviting them to engage with the newly launched DrönAir as well.



**Down to Earth Month:** In April, the CSWA holds events, tours, and special offers as part of Down To Earth Month, a celebration of sustainable leadership and practice by winegrape growers. DrönAir will partner with their customers to host events highlighting their sustainable practices, including the use of DrönAir. Press releases will be sent to local media outlets inviting them and the public to participate in these activities.

**CSWA Grower Workshops:**

Each month, the CSWA holds educational workshops throughout the targeted region open to all winegrape growers and PCA's. Workshops include a variety of speakers and presentations. During all three years, DrönAir will be involved in pesticide-related workshops held to demonstrate to members how using DrönAir can make their operation more sustainable.



## A Year in Flight Campaign

**Focus:** Customer satisfaction and retention

**DrönAir Flight School:** The customer training specialist and sales representatives will hold DrönAir Flight School sessions to train customers as they purchase the DrönAir package. The training includes licensing requirements, exam prep, DrönAir usage, and more.

**Fly In's:** DrönAir's sales representatives will do monthly customer check-ins to foster relationships and address any issues. As the customer works through the C DPR apprenticeship requirements, they need to log 50 hours of flight time with supervision. Our sales representatives are licensed to serve as their required supervision and will do so during these check-ins.

**DrönAir E-Newsletter:** Starting in year 1, DrönAir will create a monthly e-newsletter for current customers contain information on product updates, grower spotlights, tips on using the drone, and upcoming events.

**A Reflection of Flight Banquet:** At the conclusion of each year, DrönAir will host a banquet to recognize customers for their use of DronAir in their operation and progress through Flight School. For each graduate of the Flight School, a donation will be made to the American Vineyard Foundation in the graduates' names for research. Sales representatives will also nominate growers for Outstanding Grower awards, recognizing growers for innovative incorporation of DrönAir into their operation. The grower with the most impressions from the #TakingFlight campaign will also receive an award.

## Promotions Timeline

Yearly	Year 1 (Additions by Year)
<p><b>Taking Flight Campaign:</b></p> <ul style="list-style-type: none"> <li>• Cost-share Marketing Manager and Customer Training Specialist</li> <li>• The Crush advertisements</li> <li>• Regional winegrower Association sponsorships</li> <li>• Bi-monthly direct mail distribution</li> <li>• Website and social media</li> <li>• Down to Earth Month partnerships</li> <li>• CSWA Workshops</li> </ul>	<ul style="list-style-type: none"> <li>• Hire one sales representative for N. and C. Coast regions, respectively</li> <li>• Hire one technician</li> <li>• Attend the Central Coast Grape Expo</li> </ul>
	<p><b>Year 2</b></p> <ul style="list-style-type: none"> <li>• Hire one sales representative for N. San Joaquin Valley</li> <li>• Hire one technician</li> </ul>
<p><b>A Year in Flight Campaign:</b></p> <ul style="list-style-type: none"> <li>• DrönAir Flight School</li> <li>• Fly-in's</li> <li>• DrönAir E-Newsletter</li> <li>• A Reflection of Flight Banquet</li> </ul>	<p><b>Year 3</b></p> <ul style="list-style-type: none"> <li>• Hire one sales representative for S. San Joaquin Valley</li> <li>• Hire one technician</li> <li>• Attend the Central Coast Grape Expo</li> </ul>

## Financials

Income Statement	Year 1	Year 2	Year 3
New Units Leased	29	45	70
New Lease Price/Unit	\$22,000.00	\$22,000.00	\$22,000.00
Recurring Units Leased	0	29	45
Recurring Lease Price/Unit	\$5,000.00	\$5,000.00	\$5,000.00
Gross Sales	\$636,240.00	\$1,143,840.00	\$1,760,500.00
Demo Models	\$8,000.00	\$12,000.00	\$16,000.00
Spare Parts	\$347.04	\$1,070.50	\$2,592.72
Net Sales	\$627,892.96	\$1,130,769.50	\$1,741,907.28
Wholesale Unit Cost	\$4,000.00	\$4,000.00	\$4,000.00
Cost of Goods Sold	\$115,680.00	\$181,680.00	\$278,800.00
Operating Expenses	\$19,200.00	\$20,160.00	\$21,168.00
Gross Margin	\$493,012.96	\$928,929.50	\$1,441,939.28
Marketing Expenses	Year 1	Year 2	Year 3
Sales & Support Team	\$357,700.00	\$464,984.00	\$612,758.80
Marketing Manager	\$54,000.00	\$55,080.00	\$56,192.40
Magazine Advertisements	\$3,000.00	\$3,000.00	\$3,000.00
Winegrower Associatio	\$600.00	\$900.00	\$1,500.00
Direct Mail	\$553.10	\$1,421.75	\$2,754.77
Website	\$5,000.00	\$1,000.00	\$1,000.00
Social Media	\$520.00	\$598.00	\$687.70
Central Coast Grape Expo	\$6,000.00	---	\$700.00
Down to Earth Partnership	\$2,000.00	\$3,000.00	\$4,000.00
CSWA Workshop Sponsorship	\$4,200.00	\$6,306.0	\$8,406.00
A Year in Flight Campaign	\$9,079.56	\$14,513.66	\$22,132.93
Total Marketing Expenses	\$442,652.66	\$550,803.41	\$713,132.60
Net Profit	\$50,360.31	\$378,126.09	\$728,806.68
Profit Margin	8%	33%	42%

## Return on Marketing Investment

<b>Measurement</b>	Publication reach, association membership count, referral information for new sales leads, social media and Google analytics, event participation, open and click rates on e-newsletters
<b>Communication to Stakeholders</b>	<p><b>Internal:</b> Monthly reports compiled for sales and support team with key metrics, benchmarked against goals</p> <p><b>External:</b> Investors and other stakeholders will receive quarterly financial reports including a brief summary of marketing investments and return</p>

## Monitoring & Measuring

By the end of year 3:	Reach \$1.75 million in gross sales	Reach 12% market share	Maintain 98% customer satisfaction
<b>Mean of Analysis</b>	<ul style="list-style-type: none"> <li>Monitor quarterly sales reports</li> </ul>	<ul style="list-style-type: none"> <li>Quarterly sales and industry reports</li> </ul>	<ul style="list-style-type: none"> <li>Dialogue with customers</li> <li>Evaluate product, trainings, and workshop</li> </ul>
<b>Exceeded</b>	<ul style="list-style-type: none"> <li>Invest back into business</li> <li>Consider early expansion</li> </ul>	<ul style="list-style-type: none"> <li>Grow regional marketing</li> <li>Invest in product R&amp;D</li> </ul>	<ul style="list-style-type: none"> <li>Generate customer testimonials and marketing partnerships</li> </ul>
<b>Less than Exceeded</b>	<ul style="list-style-type: none"> <li>Evaluate price and target market</li> </ul>	<ul style="list-style-type: none"> <li>Analyze marketing and make adjustments</li> </ul>	<ul style="list-style-type: none"> <li>Evaluate feedback for areas of weakness</li> </ul>

## Conclusion

Strategically targeting the largest share of California's winegrape production, DrönAir can provide winegrape growers and supporting VMCs to increase efficiency and improve sustainability while minimizing health risks.

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