



2023

# Strategy Session

2023May08

# Agenda - Overview

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## **Morning**

- Review Status and Growth Drivers
- Review Scenarios

BREAK – Lunch (Brought In)

## **Afternoon**

- Deeper Dive on Scenarios
- Discussion
- Action items (for Board meeting later in May, longer term)

# Agenda - Morning

<b>Topic</b>	<b>Presenter</b>	<b>Time</b>
1) Confirm Vision	Kirk	1000-1015
2) Applications as Pathway to Growth (Current and Considered)	Shaun	1015-1100
a. Chocolate		
b. Plant based		
c. Sauces		
d. General flavor		
e. Other		
3) Commercial Partner Engagement Review, Timeline, Actions	Shaun	1100-1115
4) Baseline Forecast	Shaun	1115-1130
5) Scaleup Status and Strategy	Kirk	1130-1140
a. Overview & Status	Dave	1140-1150
b. R&D Strategy	Michelle	1150-1210
6) Scenario Planning – Outline	Kirsten	1210-1230

# Agenda - Afternoon

<b>Topic</b>	<b>Presenter</b>	<b>Time</b>
6) Scenario Planning – In Depth	Kirsten	1315-1400
a. Baseline Review		
b. Conservative		
c. Aggressive		
7) Funding	Kirsten	1400-1445
a. Use of Funds - what do we plan to do with their funds,		
b. what do we believe the company will look like after their funds have been spent in 18-24 months time/end of 2025, and		
c. our view on what happens after 2025 (further financing etc.)		
i. by scenario		
8) Appropriate Investor Targets / Engagements	Kirk	1445-1515
a. Strategics		
b. VC		
c. Other		
9) Action Item Review	Kirk	1515-1530



# Confirm Vision

# BHAG

To create the world's leading upcycler of agricultural side streams through fermentation

# Scope of Vision



> 30M

Tonnes,  
Wine Production  
(Annual Global)



> 15M

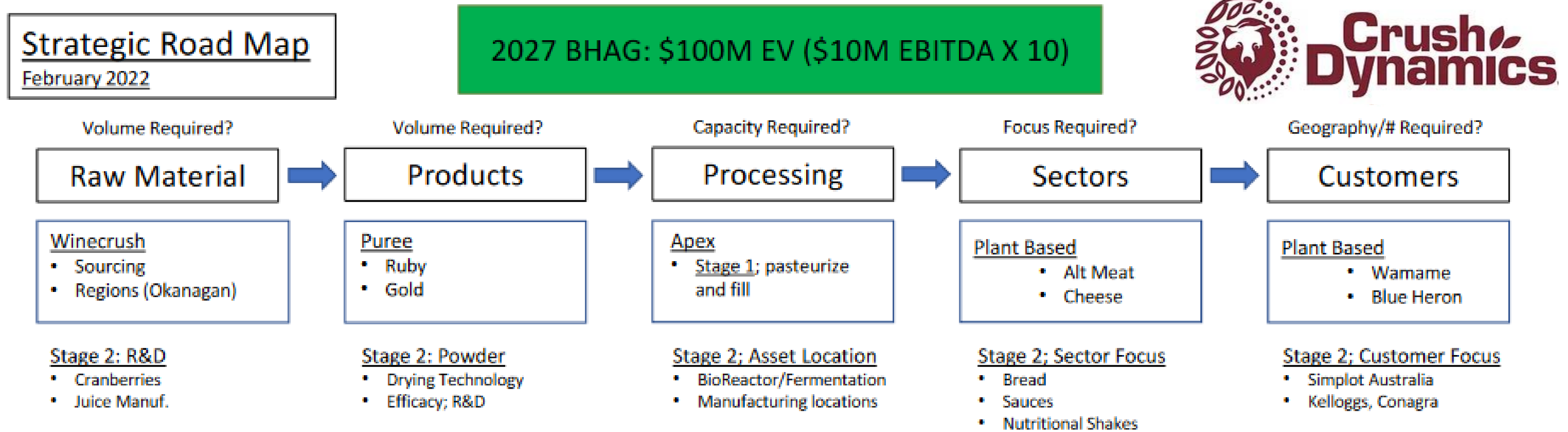
Tonnes,  
Derivative Produced  
from Wine Production  
(Annual Global)



> 50M

Tonnes,  
CO<sub>2</sub> Equivalent Emissions  
from  
Derivative Decomposition  
(Annual Global)

# 2022 View (John)



## Considerations

- Human Resources needed
  - Immediate R&D focus required for customer interactions
  - Investigation into product formats and benefits of each
- Financing Rounds to Accomplish
  - Trigger for need; 6 month minimum ahead of requirements
- Speed of Scaling
- Price points required for products
- IP Protection
  - Will increase value
  - Breadth of protection
- Finalize all product benefits; sodium reduction, salt reduction, taste improvement, texturization
- Best forms/paths for marketing communication (B2B)

# Key Differentiating Activities



EFFECTIVE  
FOOD  
PRODUCER  
CHANNEL



DEEP WIN-WIN  
RELATIONSHIPS  
WITH SIDE STREAM  
SUPPLIERS  
(WINE INDUSTRY TO START)



GLOBALLY  
SCALABLE  
PRODUCTION



STRONG  
PRODUCT / IP  
DEPTH

# Our Intellectual Property

**Focus:** “Taming the Tannins”

## Patents & Patents Pending

1. Bio-Transformed Polyphenols Product by Process (GRANTED)
2. Low Cost BioReactor Equipment
3. Bio-Transformed Polyphenols for Texturization
4. Core Technology Applied to Additional Substrates

## Trade Secrets

- Microbial Starters for expanding product line based on current and future agricultural side streams

**De-Bittering  
Through  
Proprietary  
Fermentation**



# Applications as Pathway to Growth

# Target Customer Problems

- Consumer demand for **healthier foods** (reduced sugar, sodium, preservatives) without sacrificing taste
- Global **government regulations** and taxes around High Fat, Sugar, Salt
- Consumer preference for ingredients and labels they **understand/trust**
- **Increasing spoilage** costs from expired products
- Food Chain **Sustainability** / ESG impact



## Biggest Challenges in Food and Beverage

# Value We Deliver

- Significant **Sugar reduction**
- Substantial **Calorie reduction**
- Deep **Sodium reduction**
- **Natural Shelf-Life** Extension by 55%+
- **Effective Masking** of bitter notes and off flavors (ex. Pea protein)
- **Enhancement of flavors** and spices
- **Improved texture** and mouthfeel
- **Enriched nutritional value** with phytonutrients and antioxidant
- Labelled simply as **“Grape Puree”**

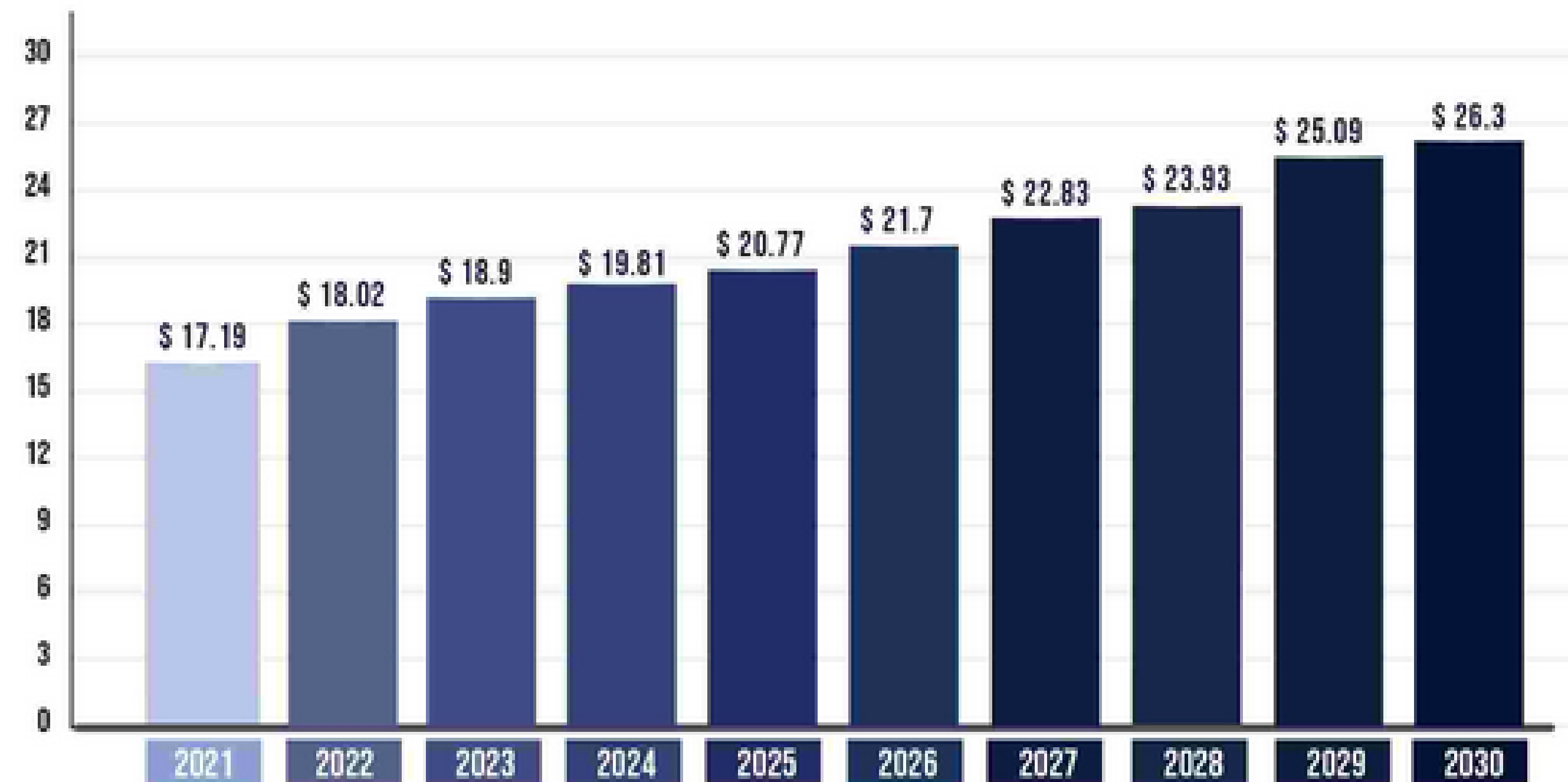


# Market Size

- All Food Flavor Applications = \$18.9B in 2023
- Market trending towards “Clean Label” solutions
- Short term focus on *Proven Food Application Areas*



FOOD FLAVORS MARKET SIZE, 2021 TO 2030 (USD BILLION)



# Overview – Growth Drivers for CDI

- Applications
- App Dev / Sales Support Staffing
- App Dev Content
- Orientation
  - Hands off vs. In full development partnership
- Other Marketing
  - Outbound, Website, Speaking, Shows

# Application Areas



## Crush Dynamics

Gold Purée and Ruby Purée for maximum flavour, texture and value  
Gold Powder and Ruby Powder for convenience

## Proven Food Application Areas:

Chocolate/  
Confectionary

Sauces/  
Savory

Plant Based Protein

Sports Nutrition

Breads/Cereals

Yogurts/Others

# Application :: Chocolate

**Market Opportunity:** The chocolate industry is striving to deliver superior products. According to Maximize Market Research, this market is valued at over \$130B USD globally. **Our flavour ingredient opportunity is valued at over \$300M by 2030.**

**Our Advantage:** Crush Dynamics has developed a new technology for flavour acuity leveraging bio transformed polyphenols. Our puree and powder ingredients provide a 50%+ reduction in sugar without relying artificial sweeteners or sugar alcohols like Erythritol.

**Market Traction:** Crush Dynamics is engaged in a joint development agreement with Cargill to produce sugar reduced chocolate for customers like Purdys. Purdy's is Canada's leading chocolatier w/81 locations. Purdys has achieved a 30-50% Sugar Reduced Chocolate product working with CrushDynamics and requires a wholesale supplier for large scale operations. We are also engaged with Mars, Mondelez, Glico brands. Current engagement represents 50% of global supply.



*“We see innovations like Crush Dynamics as a key part of the toolbox with an ability to revolutionize the chocolate industry, reducing sugar while adding nutrition through antioxidant and polyphenol-rich ingredients.”*

*~ Rachel McKinley, Purdys Master Chocolatier.*

# Application :: Sauces

# Application :: Plant-Based



# Commercial Partner Engagement Review



- Goal: Investor / Acquirer – Major Customer at least
- Status: Initial LOI
  - Completed evaluation of puree and powder formats April 21st. Plant-Based platforms seeing some challenges with color/insolubles - formal report to be provided by May 1st. COI target to be reviewed by May 1st.
- Next Steps
  - Validation across platforms in Sugar Reduction.
  - Compositional review committed to within Q2 at Senomyx.
  - Qualification of product: Dependent on whether material format must be altered.
    - Terms TBD
  - Investment future: TBD



- Goal: Investor / Acquirer – Major customer at least
- Status: Project-based LOI signed – Cocoa & Chocolate Division
  - Evaluating samples of powder and puree in three avenues:
    - Incorporation into product line as an ingredient (sugar reduction, bitter reduction)
    - Deeper incorporation into core product (EG add as a precursor to the roasting nibs to reduce bitterness and accelerate color, JDA)
    - Use technology on raw cocoa beans/powder to debitter/enhance sweetness, JDA
  - JDA under review
  - Introduced to Purdys to push new product development/commercialization.
- Next Steps
  - JDA sign-off and shipment of materials for evaluation
  - PO for scale-up product – Q2 2023
    - Terms TBD
  - Other Cargill Groups TBD
  - Investment future: TBD



- Goal: Investor / Acquirer – Major Customer at least
- Status: Evaluation
  - Evaluation showing impact in 8/10 applications
  - Eval focus on sauces, savory, and beverages
  - Proposing new product configuration (extraction) for access to larger opp's (Beverage)
  - LOI provided for review. JDA under review for new formats
  - PO for sample volumes processed.
- Next Steps
  - Upgraded LOI including above – Q2 2023
  - New samples per new configuration – Q2 2023
  - Mane to provide samples to global innovation team (Singapore) for further review
  - Mane preparing samples in complete flavor product for customer evaluation Q2.
- Investment future: TBD



- Goal: Major customer / Licensor of technology
- NOTE: significant competitor to Puris/Cargill's Protein Group
- Status: Evaluation
  - Ingredient Samples delivered Oct 13
  - LOI signed Nov 14, MTA signed MTA
    - Projected volume 50,000 – 75,000 kg of Ruby Puree – 2023 / starting H1
  - Replication of formulation by LMI Team
  - Demonstration of formulation via Reiser vacuum mixing equipment / Phase 1 complete?
    - See Report from Brian in backup materials
- Next Steps
  - Possible Phase 1.5 focused on extrusion capability / potentially including Buhler
  - Contract/License Agreement + Forecast
  - PO for product – Q1
    - Terms TBD

# Partner Engagement Summary

Flavor Houses	Company	Probability	Forecasted Revenue	Key Progress	Timeline/Key Deliverable
	Mane	75%	\$ 1,500,000	MTA/NDA Signed. Impact in 8/10 applications. Onboarding process completed. Trial Sample PO received.	Scale-up evaluation ongoing. Sampling to customers as flavors. LOI under review w/ JDA potential.
	Firmenich	50%	\$ 1,000,000	NDA/MTA signed. LOI signed.	Plant-based and Sugar reduction teams to complete analysis in Q2.
	Kerry	50%	\$ 1,500,000	NDA/MTA signed. Trial PO placed. NAM Taste Platform Leader evaluating.	LOI to be reviewed by May 5. Based on successful evaluation, firm up supply agreement.
	Dohler	40%	\$ 1,000,000	NDA signed. MTA under review.	Evaluation in functional juice concentrates and confectionery in Q2. Supply Agreement in Q3
	ADM	25%	\$ 1,500,000	NDA signed, MTA aligned and out for signature.	MTA pending. Structure review with Global Chief Flavorist in Q2.
	Sensient	25%	\$ 1,000,000	NDA and MTA under review	Legal docs to be signed by May 15.
Chocolate/ Confectionery	Company	Probability	High	Key Progress	Timeline/Key Deliverable
	Purdys	90%	\$ 50,000	Demonstrating ability to reduce added sugar by 30-100% in chocolate/ganache.	Supply Agreement signed. PO for initial scale-up in Q2. Chocolate project to commercialize in Q3/Q4.
	Cargill	70%	\$ 2,500,000	MTA/NDA Signed. LOI Signed.	JDA under Review.
	Glico	30%	\$ 1,000,000	MTA/NDA agreed upon and out for signature.	Sign NDA/MTA in Q2. Complete evaluations in Q2.
	Clifbar (Mondelez)	30%	\$ 750,000	Positive initial meeting with Innovation. ClifBar NDA/MTA out for signature.	Link into Mondelez global team. Legal reviewing NDA/MTA based on final red-line. Evaluation in Q2.
	Meiji	25%	\$ 1,000,000	Positive potential investor/customer engagement	MTA/NDA to be signed to allow for evaluation by May 31st.

# Partner Engagement Summary

Sauces/ Savory	Company	Probability	High	Key Progress	Timeline/Key Deliverable
	Daiya	60%	\$ 400,000	Project to replace shelf-life extention ingredient (Licrezz) to begin in May.	Secure agreement on formulation/R&D scale-up plan for 2023 launch. Evaluation for shelf-life extention tool through stability studies in Q2/Q3.
	Kraft Heinz	50%	\$ 1,500,000	Legal docs complete. Confirmed impact on flavor, savory, sweet and sour.	Confirmed active commercial project in Q2. Meeting May 3rd.
	Kraft Heinz - (Australia)	50%	\$ 750,000	NDA/MTA signed. Focus is on Watties Beans and Sliced Beetroots.	Evaluation results due May 3rd. Pushing product approval by KH technical teams in Q2.
	MC FONA	40%	\$ ,500,000	NDA and MTA signed.	Technical review pending regulatory approval.
Plant-Based	Company	Probability	High	Key Progress	Timeline/Key Deliverable
	Notco	65%	\$ 750,000	NDA/MTA signed. LOI signed.	LOI - Dairy-free chocolate milk results due mid-May. If successful, structure agreement for NAM co-mans. Plant-based meat evaluation results due July 31.
	Zoglos	60%	\$ 50,000	Goal to launch by Q2 2023. Securing Co-man @ CFL.	Confirm SKU's to launch in Q2, timing of production and sign Supply Agreement.
	Lovingly Made	60%	\$ 50,000	LOI signed. Commercial agreement shared.	Complete evaluation of the current vacuum infusion and extrusion trials. Commercial agreement under evaluation for Q2.
	Impossible	30%	\$ ,500,000	NDA/MTA signed. Agreement for evaluation at HQ	Evaluation to be completed in Q2.
	Total Funnel		\$21,000,000		



# Baseline Forecast

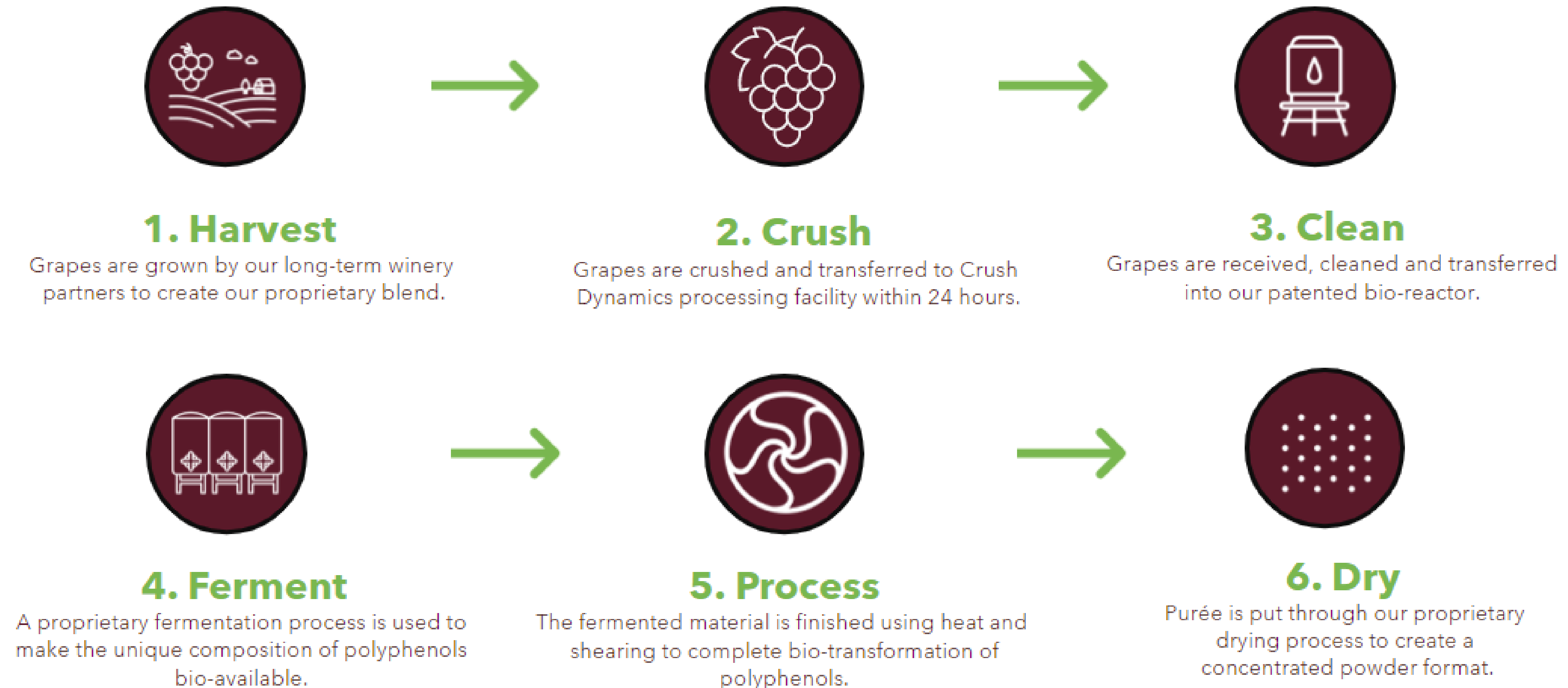
# 2023 / 2024 Baseline Forecast by Q and App

- Using same template as last board meeting by Quarter/product format.
- Include Purdys and Big Mountain



# Scaleup Status & Strategy

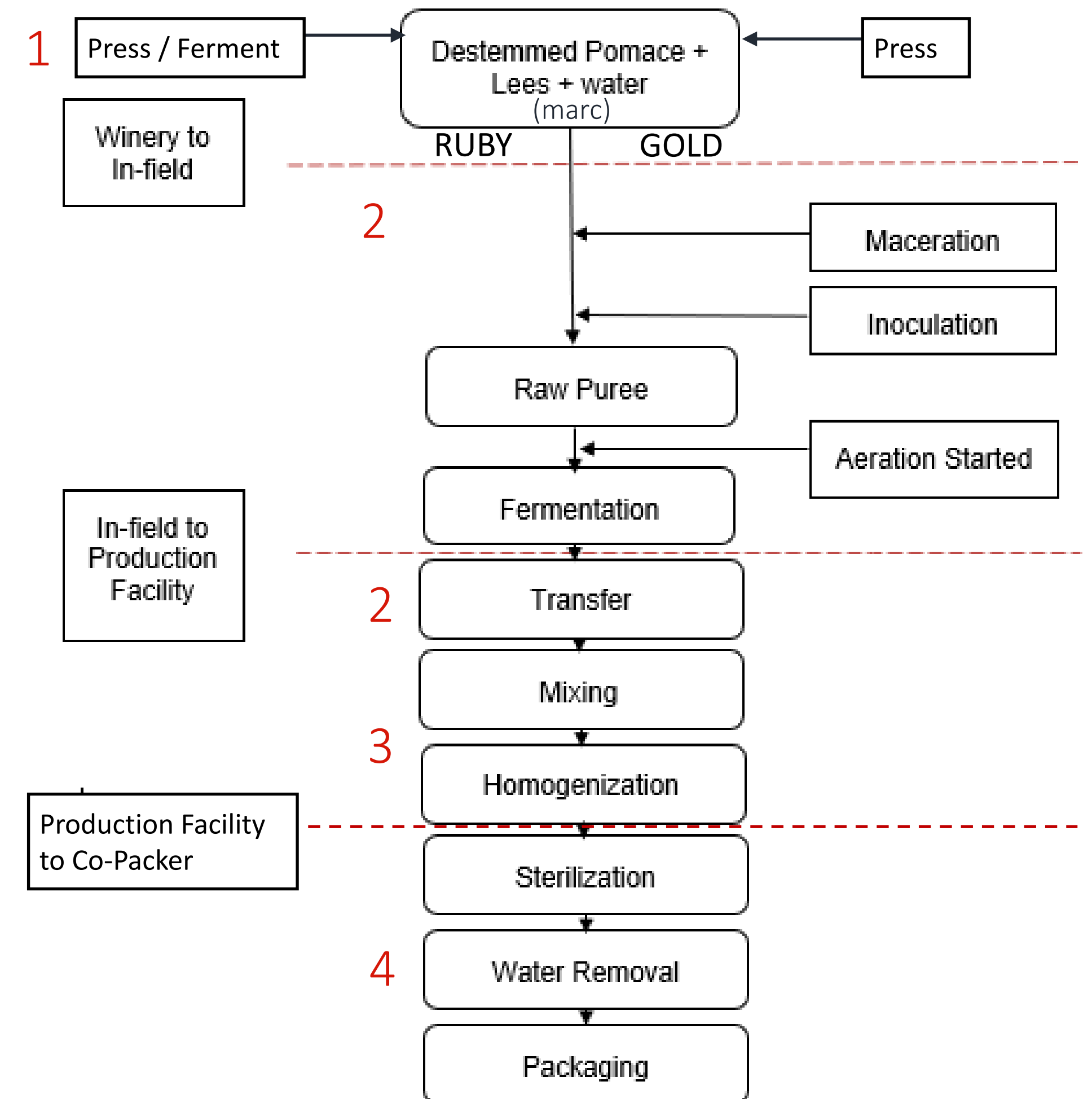
# Process Overview



# Key Requirements By Stage

Stage	Key Requirements	Note
<b>1. Harvest</b>	Consistent Quality Supply	
<b>2. Crush</b>	Compatibility with Winery Ops	
<b>3. Clean</b>	Kosher = 7 x wash by weight	New
<b>4. Ferment</b>	Achieve Consistent Quality at Scale	
<b>5. Process</b>	Particle Size, Heat Treatment Compatibility	Currently Co-Man@Apex
<b>6. Dry</b>	Retain sensory performance	

# Today's Solution



# Production Scale Up Overview

Production Stage	Current Max Annual Metric Tonnes (MT)	Key Constraint	Next Step
Harvest <i>Supply</i>	10,000 in OKV 5,000 from sml/med	<i>Ag Standard:</i> Weather & Geography Winery process compatibility	None. Ideal pilot region, need other geos for long term scale.
Crush <i>Transport</i>	500?	Kosher's 24 hour max	Need new transport supplier(s)
Clean	~400 (new for Kosher)	Still working out system.	System for 23, 23++
Fermentation	500-800	Managing each ferment manually (inoculation, mixing, monitoring, aeration)	Process optimization Vessel optimization
Process <i>Blending</i>	500	Capacity / System @ Shale facility	Planning done. Implement.
Process <i>Finishing</i>	1,000 @ APEX (confirm)	Flexibility of Apex	Consider alt/plant
Process <i>Storage</i>	-	Costly, need to minimize	TBD.
Dry <i>Dewatering</i>	TBD. Vincent press can go to ____	Critical for powder economics	Continued optimization
Dry <i>Drying</i>	Enwave, 20 MT (/10 from above),	1) Location 2) Cost (TCO)	Per annual plan
Dry <i>Milling</i>	100+ at No49 (coman)	Yet another location.	Buy equipment. Consolidate.

# CDI Scale Up Framework

**Fermentation  
R&D**



R&D including  
Fermentation Roadmap



**Ops**

Ferment



Field Fermentation  
Planning

Internal  
Processing  
("Shale")



Co-Man  
("Apex")



Production  
Planning  
(based on Market Demand)



**Platform  
R&D/Eng**



Fermentation  
Platform Roadmap



Processing  
Platform Roadmap



# Bio Reactor Roadmap (2022: AWRI/Spiegare)

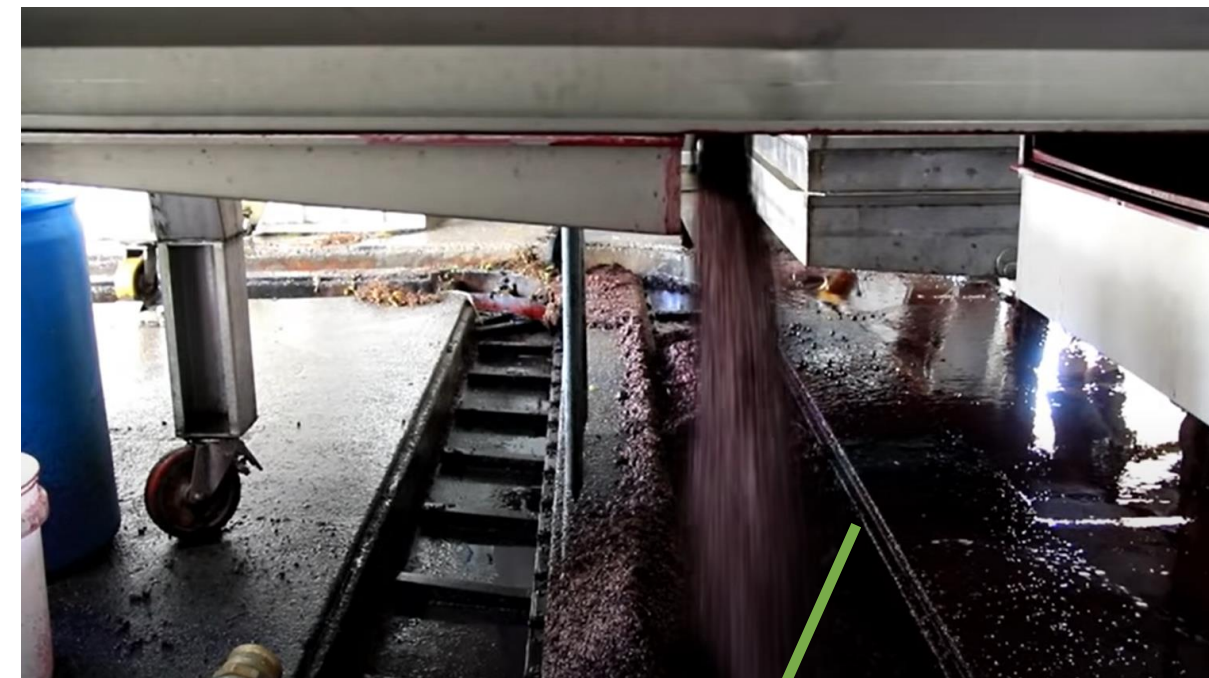
## Current Solution

- Wine press to tray
- Unload tray to container



## Medium Term Solution

- Wine Press direct to container

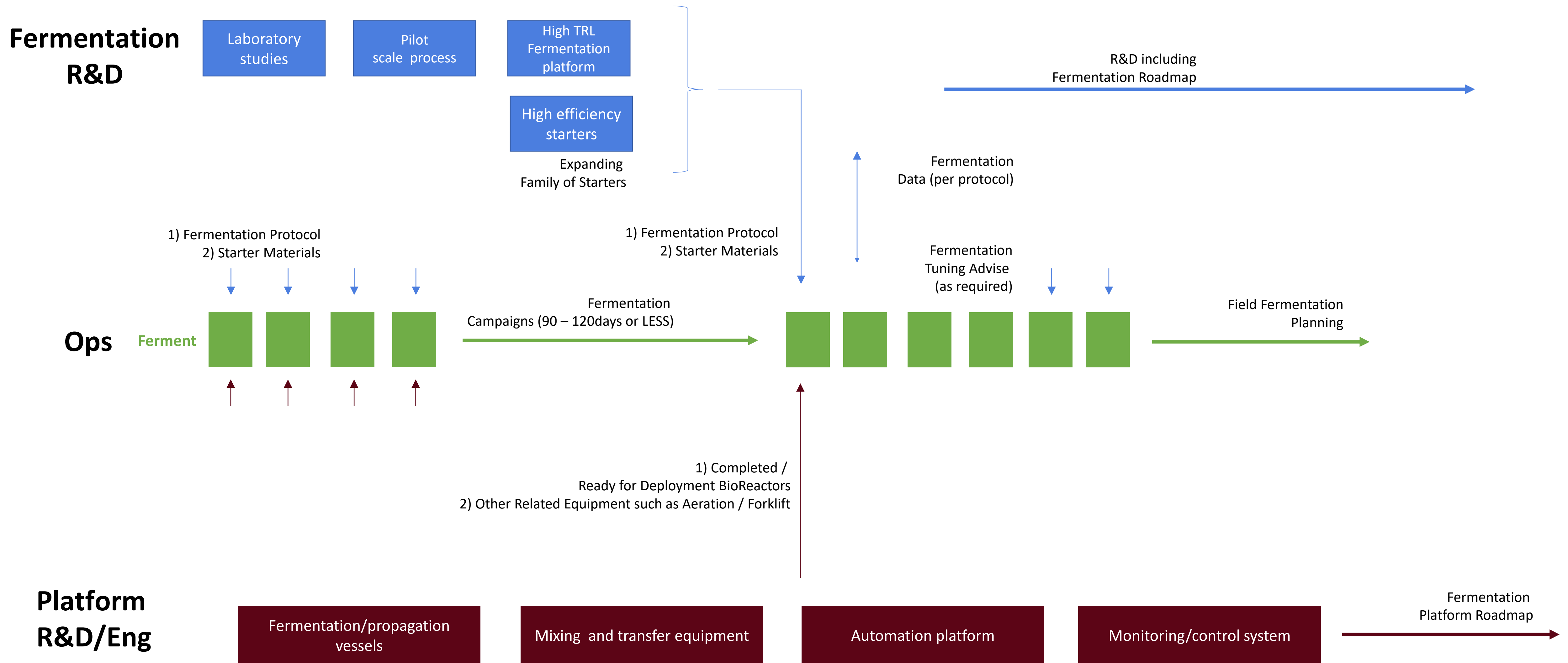


## Long Term Solution

- Wine Press direct to truck



# CDI Fermentation Operations Overview



# Fermentation Platform Roadmap

<b>Area</b>	<b>Today</b>	<b>Short Term</b> <i>(2023/2024)</i>	<b>Medium Term</b> <i>(2024/2025)</i>	<b>Longer Term</b> <i>(2025+)</i>
<b>Fermentation/propagation vessels</b>	IBC Tote for all fermentation stages	Same	Split fermentation to address aeration and mixing requirements	Optimize. As distributed/scalable as possible
<b>Mixing and transfer equipment</b>	Per Tote	Better Tools but hard to scale	Leverage integrated solutions from vinegar industry (Cetotec etc.)	Focus on achieving continuous flow
<b>Automation Platform</b>	Per Tote measurement	Better/faster measurement Equipment	Focus on automation of vinegar fermentation	As required for more continuous operation
<b>Monitoring/Control System</b>	None	TBD	Leverage solutions leading fermentation tech vendors incl/ Cetotec and Fring	Focus on implications of multiple operational sites

# Fermentation Platform Roadmap

Activities		2023			2024				2025			
R&D Phases:	Description	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Short term studies</b>	<b>Scale Up Studies (2023)</b>											
I	Starter Optimization to minimize need for Aeration etc.											
I	Process conditions studies											
I	Key parameters studies											
II	Fermentation platform end-to-end (On-site validation)											
II	Bioreactors prototype											
II	Bioreactor data collection - (end-to-end)											
II	Optimization studies											
II	Bioreactor validation (up to 100 liters)											
<b>Medium term - Production</b>	<b>Production Scale - PoC (2024)</b>											
III	Medium scale Bioreactor fermentation - up to 500 ton											
<b>Long term - Production</b>	<b>Production scale - Optimization (2025)</b>											
IV	Large scale Bioreactor fermentation - 2000 ton and beyond											

# New Kosher Constraints



**Star-K Kosher Certification**

## 1) Washing

- 7 times => SUBSTANTIAL water infrastructure requirement
- **Critical** to get started within 24 hours of press

## 2) Drying

- Need for other commercial reasons
- Question of when

## 3) Supervision

- Pricey
- Limited Hours
- Needed at Each Step of the Process (Clean, Ferment, Process, Dry)

# Overall Scale Up Plan - Suppliers

## Medium Term (2024 Harvest)

- Move to Phase II of winery relations, paying for quality long term supply
- Work with larger winery partners: Arterra, Peller, Quail's Gate to minimize complexity
- Push (Kosher) wash step out to them

## Longer Term (2025+ Harvest)

- Focus on winery optimized Kosher approved appliance to automate supervision
- Consider inclusion of drying in appliance to minimize supervision
- Development will take some time, start ASAP to achieve projected scale.

# Updating on 2024 Drying Process Options

Brand	# Machines	Equipment Cost	Feed Rate (kg/hr)	Hours per Day	Days per Year	Yearly Throughput - Dewatered (kg)	Actual Throughput - Full Moisture(kg)	Yearly Powder (kg)	Potential Revenue (at \$120/kg)	Moisture
Artisan	1	\$ 8,000,000.00	1200	8	260	2,496,000	2,496,000	325,565	\$ 39,067,826.09	88%
	2	\$10,000,000.00	2400	8	260	4,992,000	4,992,000	651,130	\$ 78,135,652.17	88%
NuWave	1	\$ 1,300,000.00	345	8	260	717,600	717,600	93,600	\$ 11,232,000.00	88%
	2	\$ 2,600,000.00	690	8	260	1,435,200	1,435,200	187,200	\$ 22,464,000.00	88%
	3	\$ 3,900,000.00	1035	8	260	2,152,800	2,152,800	280,800	\$ 33,696,000.00	88%
	1	\$ 1,300,000.00	412	8	260	856,960	1,784,640	232,870	\$ 27,944,347.83	75%
	2	\$ 2,600,000.00	824	8	260	1,713,920	3,569,280	465,739	\$ 55,888,695.65	75%
	3	\$ 3,900,000.00	1236	8	260	2,570,880	5,353,920	698,609	\$ 83,833,043.48	75%
EnWave	1	\$ 1,800,000.00	50	8	260	104,000	218,400	28,261	\$ 3,391,304.35	75%
	1	\$ 2,620,000.00	100	8	260	208,000	436,800	56,522	\$ 6,782,608.70	75%

# Open Questions :: Scale Up

- Plant logistics – do we need one/what is trigger?
- Partners
  - Technology
  - Wineries
- Overall operational model to scale
  - Depth of supply/winery partnerships



# Planning Scenarios: Overview

# Outline for Outline

- Current PoR: per current investor deck
  - 1, 5, 20
  - 2023: need to firm up
    - Financing AND
    - Firmness of forecast
  - Pricing is a significant consideration
- Conservative: per harvest with no new equipment
  - If no financing or forecast
  - .5, 2, 5
- Aggressive: shaun's weighted 2024 with same growth multiple as baseline for 2025, 2026



# Lunch



# Planning Scenarios: In Depth



# Funding Plans By Scenario



# Investor Targets Discussion



# Action Item Review



# Thank You

# Q&A