

Cultivator Report: Flow Gardens

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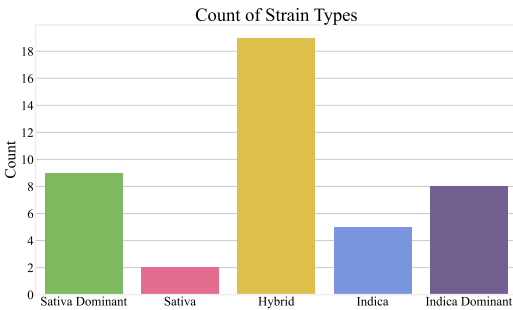
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Cultivator Data

This is a report on Flow Gardens, a hemp producer in Tennessee. The report covers producer-reported strain data, user-submitted reviews, and chemical data extracted from COAs with OpenAI’s ChatGPT model *. We analyze the reviews, strain images, and extracted chemical data. We hope these statistics can help shed light on Flow Gardens’ strains.



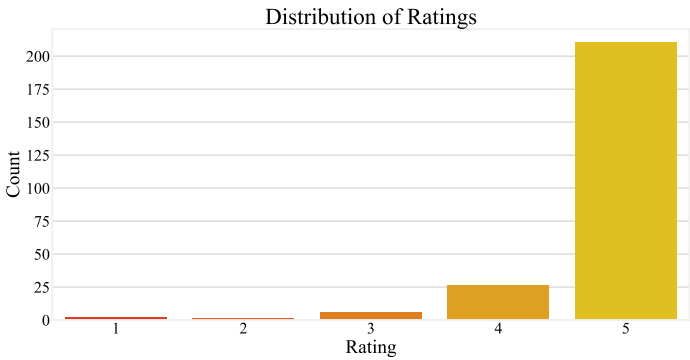
Strain Name	Strain Type	Number of Reviews	Average Rating	Parsed COA Data
Apple Jax	Hybrid	3	5.0	
B.O.B.	Sativa Dominant	9	5.0	✓
Black Ice	Indica Dominant	9	4.4	✓
Bleu Runtz	Indica	4	5.0	
Blue Cheese #12	Hybrid	5	5.0	
Blue Cheese A3	Hybrid	9	4.6	
Blue Dream	Sativa Dominant	9	4.6	✓
Bordeaux	Hybrid	9	5.0	✓
Butter Berry (PointBreak X OZK)	Sativa	9	5.0	
CAPS Chem Chillz	Hybrid	9	5.0	
Cake Crasher	Sativa Dominant	9	4.7	✓
Cakeberry Brûlée	Hybrid	1	4.0	✓
Chimera	Hybrid	7	4.7	
Donny Burger	Indica Dominant	1	5.0	
Durban Poison	Sativa	9	4.9	
Fabled	Hybrid	4	5.0	✓
Flows Cookies	Hybrid	9	4.9	✓
Gary Payton	Hybrid	4	4.5	
Grapefruit	Sativa Dominant	9	4.9	
Legendary Platinum OG	Indica	1	5.0	
Lemon Cherry Sherbet	Indica Dominant	9	5.0	✓
Lemon Vanilla OG (LVOG)	Hybrid	8	4.4	✓
MAC 1	Hybrid	9	4.7	✓
Mango Tree	Indica	1	5.0	✓
OG Gelato	Hybrid	3	4.3	✓
Orange Apricot MAC	Sativa Dominant	6	5.0	
Orange Glaze #3	Indica Dominant	5	5.0	✓
Paradise OG	Hybrid	9	5.0	✓
Punch Breath	Indica Dominant	9	4.6	✓
Rainbow Sherbet #11 (RS-11)	Hybrid	9	5.0	✓
Skunk Butter	Hybrid	6	4.2	✓
Specimen X	Indica Dominant	9	4.7	✓
Strawberry Cough	Sativa Dominant	9	5.0	✓
Tennessee Moonshine	Sativa Dominant	2	5.0	
Trop Cherry	Sativa Dominant	9	4.8	✓
White Cheddar	Sativa Dominant	9	5.0	✓
Wipeout	Hybrid	3	4.7	✓
Wizard of OZ	Indica Dominant	1	5.0	

Total Flow Gardens Data

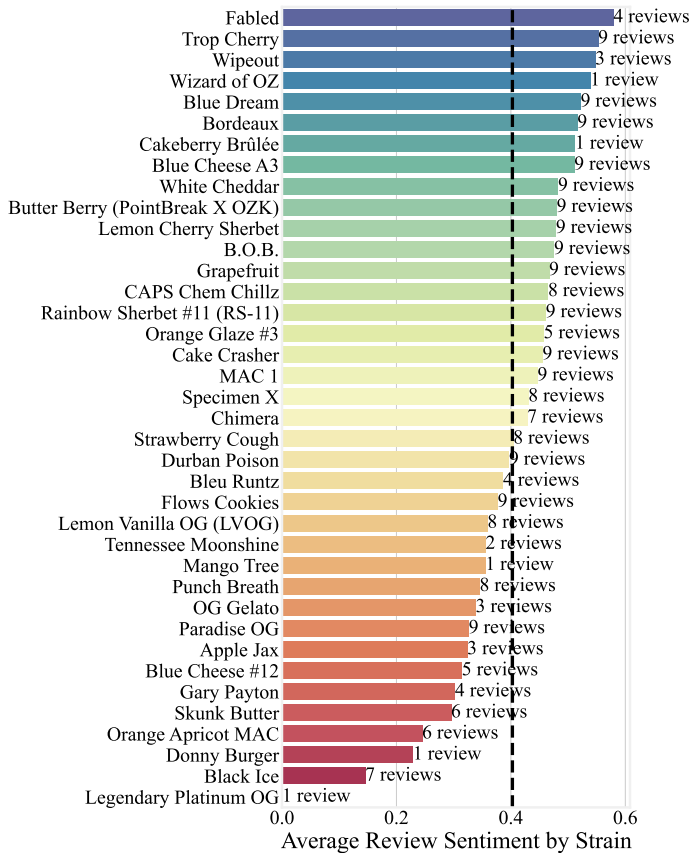
Total Strains	38
Total Reviews	245
Total Parsed COAs	25

* Note: We use the gpt-4-vision-preview model. Extracted cannabinoid and terpene data may contain mistakes.

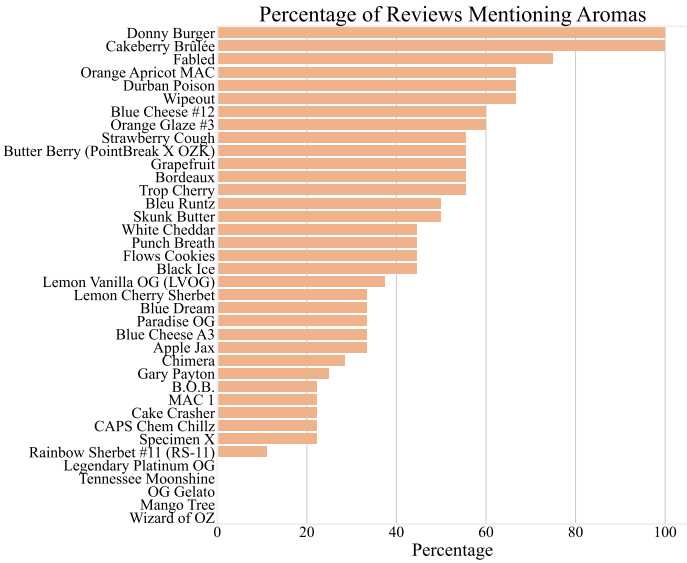
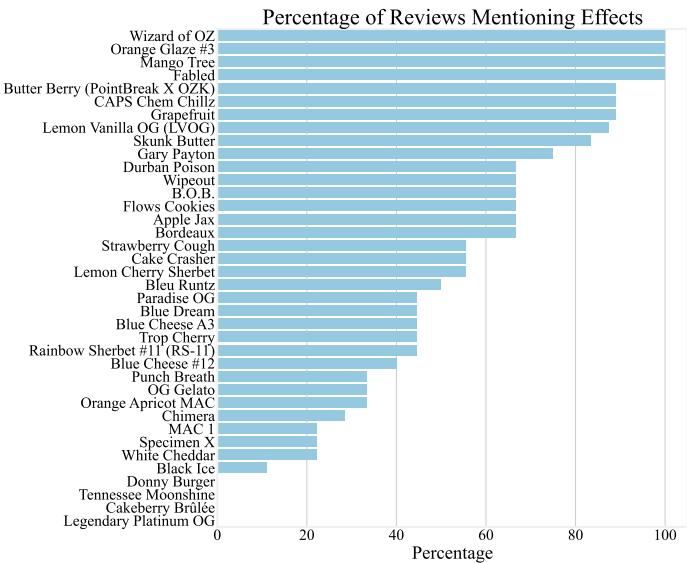
Reviews



Reviews for strains were collected from Flow Gardens’ website. Natural language processing (NLP) and the Vader Sentiment Intensity Analyzer (SIA) were used to measure the sentiment of each review. The average sentiment for each strain is depicted below, with lower values indicating lower sentiment and higher values indicating greater positivity.



Effects and aromas were extracted using OpenAI’s gpt-4-0125-preview model. The percentage of reviews that mention an effect or an aroma are shown in the following figures.



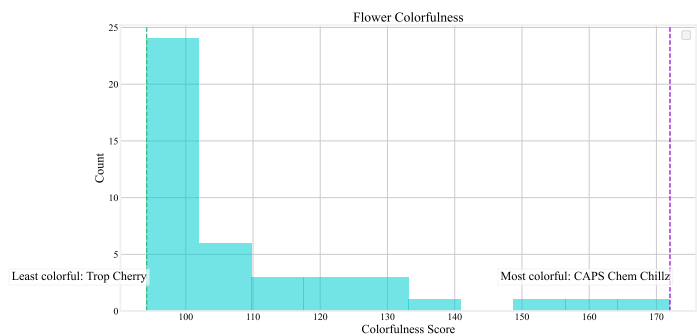
Finally, we look at the reviews that mention *Sativa* or *Indica*, corresponding strain names, and designated strain types. This can give an idea of how well users are utilizing current classifications.

Strain Name	Strain Type	Sativa Mentions
Grapefruit	Sativa Dominant	3
Durban Poison	Sativa	3
Trop Cherry	Sativa Dominant	2
Lemon Vanilla OG (LVOG)	Hybrid	1
Orange Apricot MAC	Sativa Dominant	1

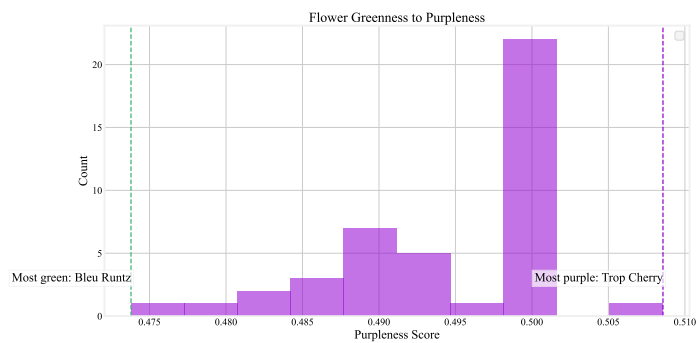
Strain Name	Strain Type	Indica Mentions
Rainbow Sherbet #11 (RS-11)	Hybrid	2
B.O.B.	Sativa Dominant	1
Paradise OG	Hybrid	1
Butter Berry (PointBreak X OZK)	Sativa	1
MAC 1	Hybrid	1

Strain Images

Images for each strain were analyzed for their *colorfulness* and *purpleness*. These are simply rudimentary measures of color to help quantify each strain.



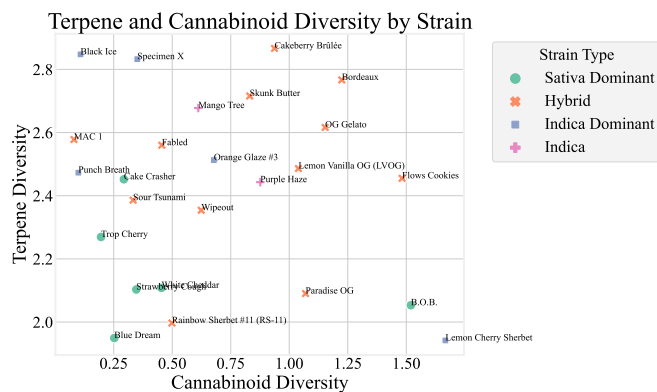
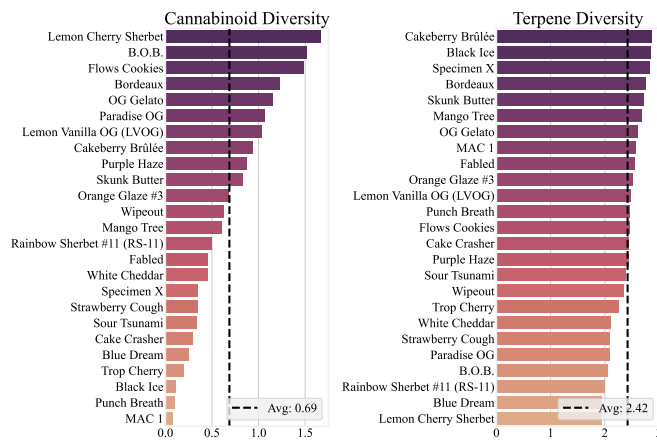
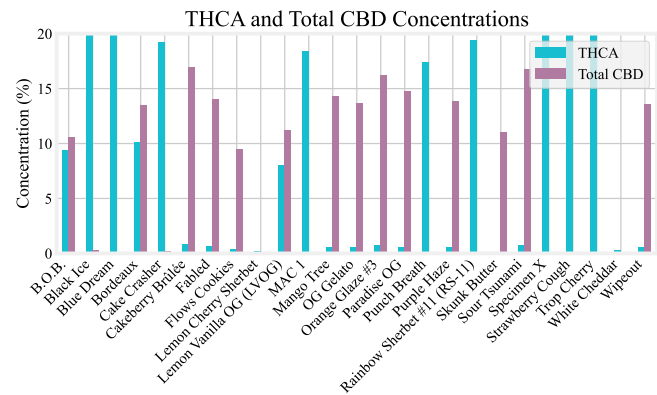
The measure of *purpleness* can be used to identify strains that people would recognize as purple. Alternatively, the inverse of *purpleness* is *greenness*, which could be a desirable trait in its own right.



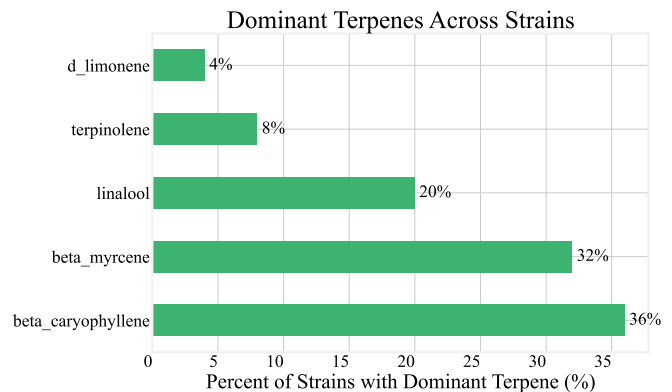
Strain Name	Purpleness	Colorfulness
Apple Jax	0.49	120.94
B.O.B.	0.50	97.51
Black Ice	0.49	129.64
Bleu Runtz	0.47	163.79
Blue Cheese #12	0.50	97.92
Blue Cheese A3	0.50	97.63
Blue Dream	0.49	110.64
Bordeaux	0.50	97.90
Butter Berry (PointBreak X OZK)	0.50	109.07
CAPS Chem Chillz	0.48	172.01
Cake Crasher	0.49	114.03
Cakeberry Brûlée	0.50	98.47
Chimera	0.49	150.61
Donny Burger	0.49	99.57
Durban Poison	0.48	117.93
Fabled	0.50	97.37
Flows Cookies	0.50	98.30
Gary Payton	0.49	131.29
Gassed Up (Bubba Gas x T1)	0.49	102.22
Grapefruit	0.50	98.33
Legendary Platinum OG	0.50	110.32
Lemon Cherry Sherbet	0.50	98.05
Lemon Vanilla OG (LVOG)	0.50	97.70
MAC 1	0.50	99.58
Mango Tree	0.50	97.64
Modified Grapes	0.49	107.65
OG Gelato	0.50	98.56
Orange Apricot MAC	0.49	106.93
Orange Glaze #3	0.50	97.22
Paradise OG	0.50	98.15
Punch Breath	0.50	106.17
Purple Haze	0.49	100.22
Rainbow Sherbet #11 (RS-11)	0.50	98.54
Sherb Cake	0.49	136.04
Skunk Butter	0.50	97.24
Sour Tsunami	0.50	96.87
Specimen X	0.49	100.74
Strawberry Cough	0.48	131.49
Tennessee Moonshine	0.50	98.00
Trop Cherry	0.51	94.18
White Cheddar	0.50	97.72
Wipeout	0.49	117.80
Wizard of OZ	0.49	102.98

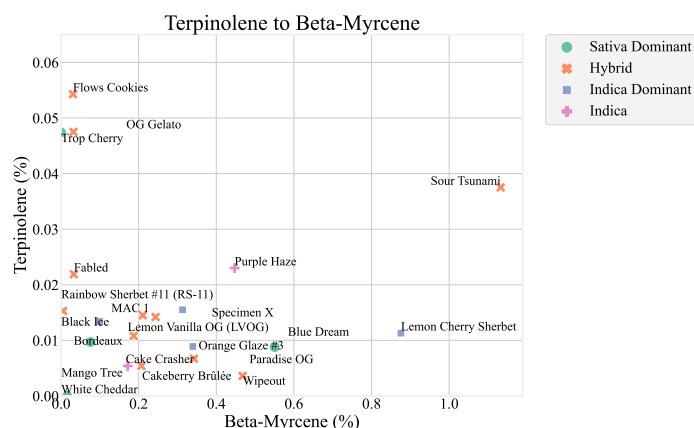
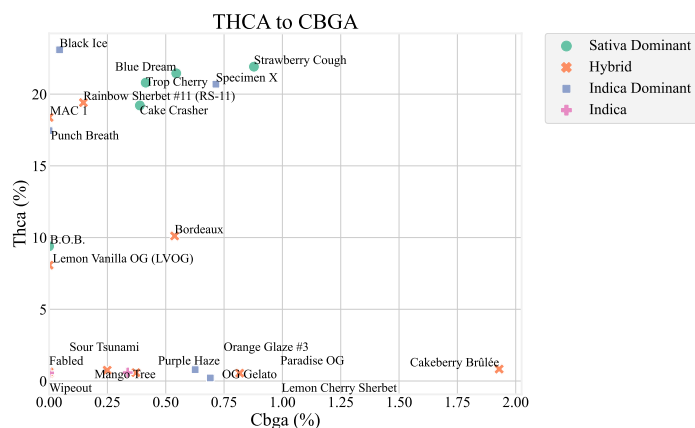
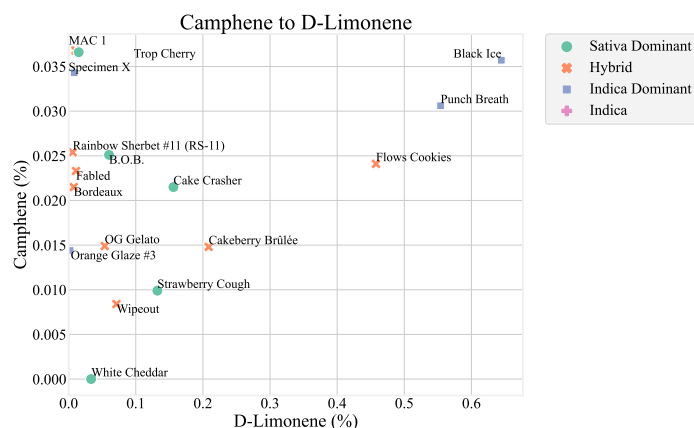
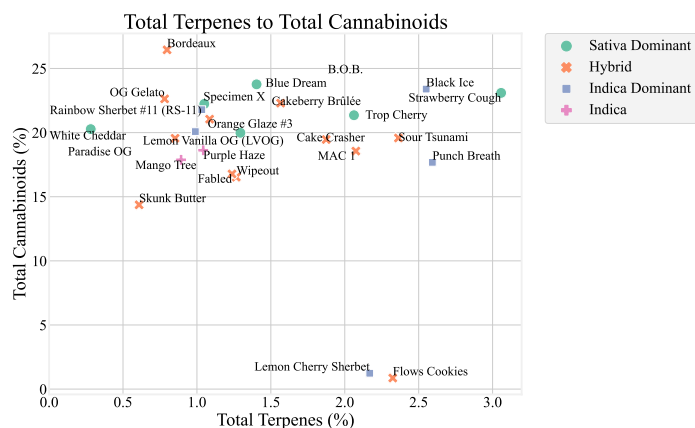
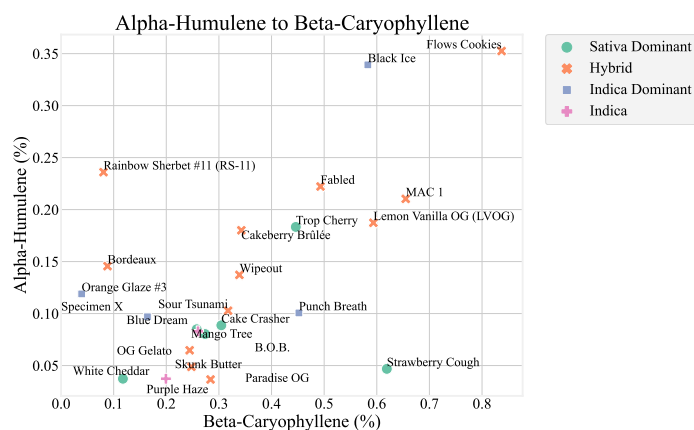
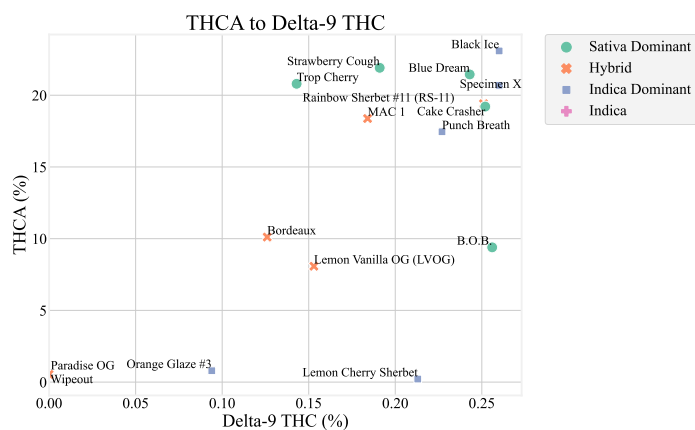
Chemical Analysis

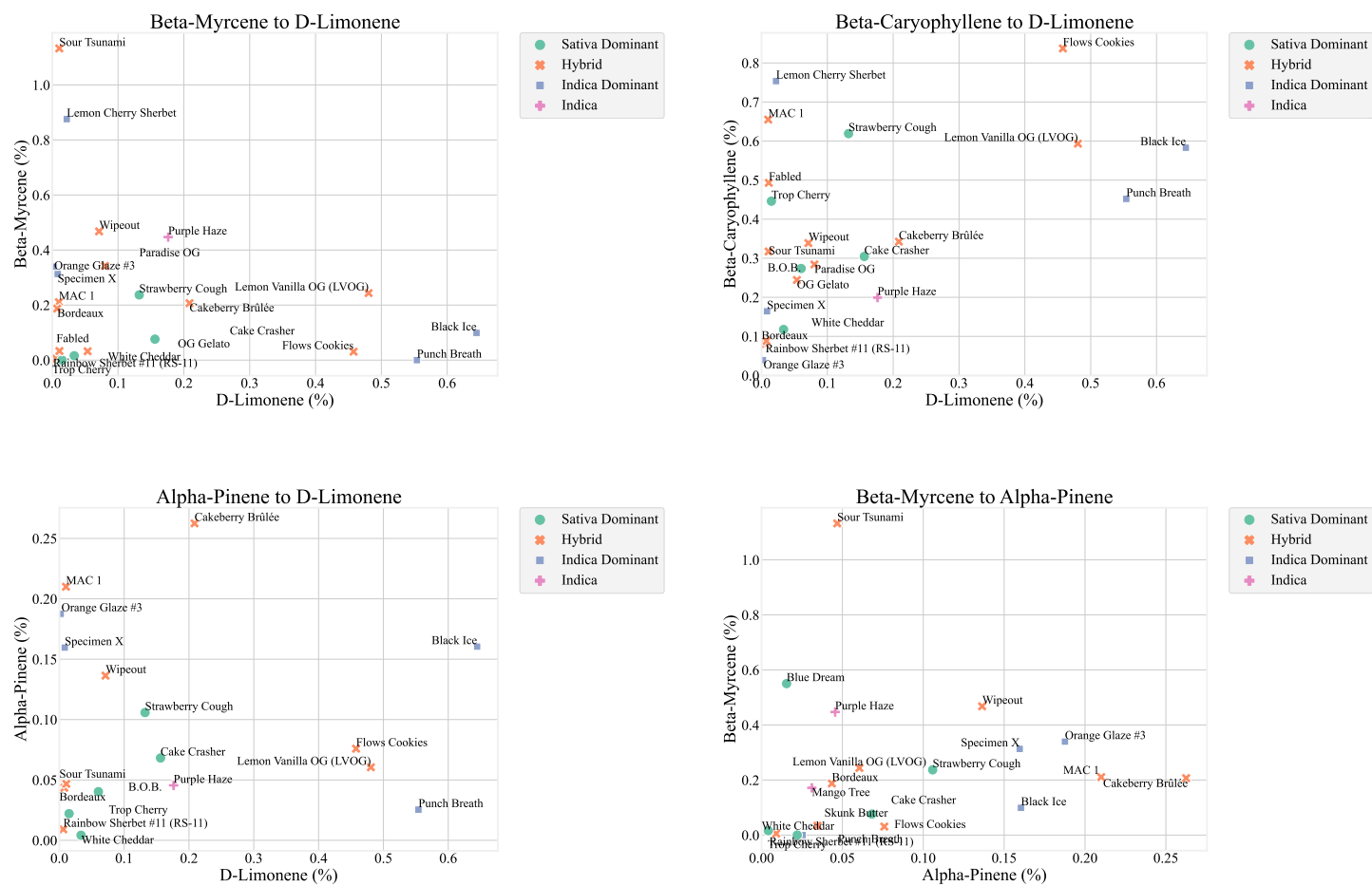
First, we examine THCA, Δ-9 THC, and CBD concentrations. We then look at the total cannabinoids and the total terpenes. Next, CBGA and other minor cannabinoids are visualized. Then, ratios of dominant terpenes are examined. We also use the Shannon Diversity Index to quantify the diversity of terpenes and cannabinoids found in each strain. Finally, PCA scores are calculated using observed dominant terpenes to create clusters of chemically similar strains.



Compound	Detection Rate	Average (%)
Cannabinoids		
cbc	48%	0.05
cbca	36%	1.13
cbd	100%	1.92
cbda	92%	7.75
cbg	92%	0.14
cbga	92%	0.41
cbn	24%	0.00
cbna	12%	0.00
delta_8_thc	48%	0.04
delta_9_thc	64%	0.18
thca	96%	9.03
thcv	24%	0.00
thcva	24%	0.00
Terpenes		
alpha_bisabolol	96%	0.07
alpha_humulene	96%	0.13
alpha_pinene	84%	0.08
alpha_terpinene	40%	0.00
beta_caryophyllene	100%	0.36
beta_myrcene	96%	0.25
borneol	84%	0.02
camphene	76%	0.02
caryophyllene_oxide	84%	0.00
cineole	0%	N/A
citral	0%	N/A
d_limonene	88%	0.15
delta_3_carene	0%	N/A
dihydrocarveol	0%	N/A
fenchone	28%	0.01
gamma_terpinene	56%	0.01
linalool	96%	0.30
menthol	0%	N/A
nerolidol	0%	N/A
ocimene	40%	0.11
pulegone	0%	N/A
terpinolene	96%	0.13







PCA of Strains by Dominant Terpenes

