What to Grow?

Data-Based Strain Evaluation vs. Strain Names

by Ulrich Reimann-Philipp, PhD

All Cannabis strains have names. If all strains had unique properties there would by now be thousands of different ones. New strains are created all the time. So, do the names really have (unique) strains?

Deciding what strains to grow and acquire determines whether the flower will be in demand and what price it can fetch. How to pick the best ones?

Commercial grow operations I worked in had at times moms of more than one hundred strains, up to 160 when pheno-hunting. All of these had to pass through tissue culture and be tested for Hop Latent Viroid (HLVd) on a regular basis.

An earlier study based on the statistical analysis of over 2,600 flower samples from a Nevada testing laboratory had shown that the strains cold best be grouped based on their terpene profiles. Most of the samples were separated into only three groups, with some outliers. This showed that there was very little variety within the 396 strains.

Read the study.

I used data compiled from METRC and Confident Cannabis to document the performance of strains we grew. Two tables at

the end of the document show harvest data and testing results for seventy-six strains (1,563 total test results). Excluded were siblings of strains grown from seed to maximize variety. I also numbered the strains to maintain confidentiality and added color codes for easier viewing.

All strains were Type 1 (high THC, low CBD), with less than 0.2% CBDa. As in the published work, using the terpene profiles was best to group the samples.

When we grouped the strains by the most abundant terpene combinations we again found that most of the strains fit into 3 groups: 83% of the strains for combining the most abundant two terpenes and 76% for combining the most abundant three (see table). In effect, we were growing many strains with very similar terpene and cannabinoid profiles.

2 most abundant Terp.s		# of Strains	% of Strains	3 most abundant T	# of Strains	% of Strains		
beta_caryophyllene	delta_limonene	31	41	delta_limonene	beta_caryophyllene	beta_myrcene	34	45
beta_caryophyllene	beta_myrcene	20	26	delta_limonene	beta_caryophyllene	linalool	14	18
beta_myrcene	delta_limonene	12	16	delta_limonene	beta_caryophyllene	alpha_humulene	10	13
alpha_pinene	beta_myrcene	3	4	beta_caryophyllene	beta_myrcene	alpha_humulene	4	5
beta_caryophyllene	alpha_humulene	3	4	delta_limonene	beta_myrcene	linalool	4	5
alpha_humulene	delta_limonene	2	3	alpha_pinene	beta_myrcene	beta_caryophyllene	3	4
delta_limonene	linalool	2	3	delta_limonene	beta_myrcene	alpha_pinene	2	3
alpha_pinene	delta_limonene	1	1	beta_caryophyllene	alpha_bisabolol	alpha_humulene	1	1
beta_caryophyllene	alpha_bisabolol	1	1	beta_myrcene	linalool	beta_caryophyllene	1	1
beta_myrcene	linalool	1	1	delta_limonene	alpha_humulene	beta_myrcene	1	1
1999 (1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -	Total:	76		delta_limonene	beta_caryophyllene	valencene	1	1
				delta_limonene	beta_myrcene	beta_pinene	1	1
					5	Total:	76	0.

Strains grouped by the most abundant terpenes.

Collecting and maintaining a large variety of strains is tempting but is it necessary? Keeping strains with very similar terpene profiles makes little sense considering the need for mom room space and care. Selecting the best ones of each terpene profile group based on yield, potency, flower appearance and resistance keeps the number to be maintained manageable while still having a genuine variety on offer.

Keeping fewer strains requires taking the best possible care of the mothers. Replacing them on a regular basis with tissue culture copies and smart qPCR testing for virus and viroid infection help maintaining a vigorous and consistent genetic stock. Good trimming, curing and packaging will then produce a quality product that customers will appreciate.

Learn more about keeping your valuable strains healthy at <u>https://tcworkslab.com/</u>.

Strain	# of Samples	THC Max	oz /Plant Max	Max g Dry lft2
PST#1	1	19.2	18.3	n/a
PST#2	166	29.7	18.8	93.5
PST#3	4	22.5	20.5	106.3
PST#4	8	23.3	19.6	102.5
PST#5	76	28.3	17.4	88.2
PST#6	43	25.3	18.3	93.0
PST#7	165	35.2	21.8	108.0
PST#8	8	27.5	21.0	103.6
PST#9	3	28.6	19.6	95.2
PST #10	3	26.3	9.8	48.7
PST #11 PST #12	10	19.5	13.6	n/a 73.4
PST #12	163	30.0	22.2	
PST #14	8	21.8	17.4	89.3
PST #15	88	25.7	19.9	102.8
PST #16	4	23.4	14.6	72.7
PST #17	3	22.6	17.5	n/a
PST #18	6	23.4	15.7	82.3
PST #19	17	28.5	19.4	99.7
PST#20	33	25.8	17.9	77.8
PST #21	93	33.8	20.1	103.8
PST#22	40	26.6	18.9	95.7
RDST #1	175	29.5	22.0	101.5
RDST #2	140	30.0	19.1	80.0
RDST #3	92	28.9	19.0	91.2
RDST #4	108	29.8	20.9	78.3
RDST #5	2	20.8	n/a	n/a
RDST#6	5		20.7	89.9 62.4
RDST #8 RDST #7	4	20.2	19.4	92.9
RDST #9	9	21.3		nla
RDST #10	1	17.8	14.7 nla	n/a
RDST #11	1	18.7	nla	nla
RDST #12	1	15.3	14.3	n/a
RDST #13	3	21.4	nla	nla
RDST #14	1	23.7	19.5	n/a
RDST #15	2	15.8	19.5	88.9
RDST #16	1	19.7	19.0	86.4
RDST #17	1	27.7	nla	nla
RDST #18	2	17.3	nla	nla
RDST #19	2	18.6	nla	nla
RDST #20	3	21.2	18.6	80.9
RDST #21	3	20.5	nla	n/a
RDST #22	1	15.0	nla	n/a
RDST #21	1	18.2	n/a	n/a
RDST #24 RDST #25	1	19.6	12.7	57.9
RDST #26	2	10. f	9.4 n/a	n/a n/a
RDST #21	1	28.6	19.6	35.2
RDST #2	2	19.5	n/a	nla
RDST #2	1	13.8	nia	nla
RDST #30	2	20.4	nla	nla
RDST #31	4	24.3	16.1	70.2
RDST #32	1	10.4	nla	nla
RDST #31	1	16.6	nla	n/a
RDST #34	1	18.5	15.1	68.9
RDST #35		28.4	22.1	104.5
RDST #36		16.1	15.5	76.2
RDST #31	1	19.9	16.9	73.4
RDST #40	2	14.8	nla	nla
RDST #38		22.9	19.6	89.1
RDST #35	1	17.9	15.9	nia
RDST #41	2	20.8	14.0	67.7
RDST #42		21.8	17.4	86.3
RDST #41	3	18.4	nla	nia
RDST #44 RDST #49		20.8	n/a 14.4	nla
RDST #45		18.0	19.2	n/a 77.8
RDST #40	4	10.0	n/a	n/a
RDST #48	1	25.8	22.6	103.1
RDST #4		24.3	21.6	98.2
RDST #50	1	10.8	nla	nla
RDST #5	1	22.1	23.7	107.9
RDST #5		23.5	19.8	nla
RDST #5	2	16.0	17.1	nla
RDST #54		31.5	18.8	36.5
		19.2		

	Its				otal		otal		otal		otal		otal		otal	ć	Total
	Results	*	*	Terp	% Tota	Terp.	% Total	Terp	% Tota	Terp	% Tot	Terp	% Tot	Terp	% Total	Terp	1.3
		Av.	Max	12	ä	#2	#2	643	83	84	24	52	52	94	52	2.0	2.0
PST#1	100	1.85		beta_caryophylle			and the second second	sipha_humulene		alpha_codrone		beta_myrcene		linalool	-	alpha_terpineol	2.
PST#2 PST#3	153	the second se	3.82			beta_caryophylle delta_limonene	-	linalool linalool	_	bota_myrcene alpha_humulene	3.0			alpha_humulene beta_myrcene	5.7	alpha_terpineol nerol	4.0
PST#4	8	2.52	3.55			beta_caryophylle		beta_myrcene		linalool	7.4			beta_pinene	6.2		5.
PST#5	75	2.17	3.27	delta_limonene		alpha_humulene		beta_caryophylle	12.2	beta_ociment	7.3			beta_pincee	_	beta_myrcene	4.0
PST#6	43	2.17	3.09	delta_limonene		beta_caryophylle		beta_myrcene		alpha_humulene		linalool	6.3	A set of the set of th		1566 St. 111111	3.
PST#7	152	2.62	4.73	beta_caryophylle	23.3	bota_myrcene	22.7	delta_limonene	20.7	alpha_humulene	6.7	upha_bisubolol	2.9	linslool	2.6		2
PST#8	8		3.15	delta_limonene	32.8	beta_caryophylle	13.2	beta_myrcene	12.2	linalool	11.0		6.0	and the second se		alpha_lumulene	4.
PST#9	3		2.56	beta_myrcene		beta_caryophylle		delta_linosene	18.6			2559		linalool	4.2	and the second division of the second divisio	3.0
PST #10 PST #11	3	Contraction in contract on	3.39	beta_caryophylle		delta_limonene		valenzene: : : : :	14.8	the second s	-	linalool		beta_myrcene		alpha_cedrene	4.
PST #12	10		1.50	delta_limosene beta_myrcene		beta_caryophylle beta_caryophylle		delta_limonene	8.4	linalool linalool		alpha_humulene alpha_humulene	5.6		4.4		4.2
PST #13	157	the second s	4.73	beta_caryophylle		dolta_limonene		sipha_humulone		eulensepe		beta_myrcene		linalool		siphs_cedrene	3.5
PST#14	8		3.29	delta_limonene	1	bota_caryophylle		siphs_humulone	7.8			lisslool	6.1		4.8	the state of the s	2.
PST#15	86	2.28	3.59	beta_myrcene		delta_limonene	20.6	beta_caryophylle	18.1	linslool	8.4	siphs_humulene	7.6	siphs_birsboloi	3.7	uphs_terpineol	3.
PST #16	4		3.62		29.0	beta_caryophylle		linalool		beta_myrcene		alpha_humulene	6.1	alpha_terpincol	4.7	Contract of the local division of the local	4.0
PST #17	3		3.21	delta_linonene		beta_caryophylle		lisalool		beta_myrcene	7.0	the second s		alpha_humulene	5.6	The second se	4.
PST #18	6		2.84			beta_caryophylle		linalool		beta_myrcene	7.4			alpha_bumulene		alpha_terpineol	4.1
PST #19 PST #20	17	Contraction of the local division of the loc	3.65	delta_limonene	Concession of the local division of the loca	linalool		beta_myrcene		beta_caryophylle		alpha_terpineol	4.8	And a strength of the state of	4.7	alpha_humulene	3.6
PST #20	92	1.50	3.04	delta_linosene beta_caryophylle		beta_caryophylle beta_myrcene		linalool delta_limonene	10.8	alpha_humulene		beta_myrcene linalool	8.3	the second s	5.3	the suffrage of the local data in the local data	21
PST#22	40		3.73	delta_limonene		bota_cargophylle		linalool		alpha_humulene	6.8		5.2	the second s		sipha_terpineol	3.
RDST#1	168	2.58	3.87			bota_myrcene		delta_limosene		linstool		siphs_humalone	_	sipha_torpincol		sipha_bisabolol	2
RDST#2	136	2.52	3.82	beta_caryophylle	28.6			beta_myrcene	13.7	linslool		siphs_hemelone	3.3	And the second se	3.0	alpha_bisabolol	2
RDST#3	92	1.89	3.17	beta_caryophylle	31.4	delta_limonene		linalool	12.2	beta_myrcene		alpha_lumulone	_	slpba_bissbolol	2.8		2.
RDST#4	107	2.23	3.11	beta_myrcene		beta_caryophylle		delta_limonene	13.6		8.5		_	lolodesid_edgle		ulpha_terpineol	3.2
RDST#5	2	1.90	1.99	beta_myrcene		beta_caryophylle	and the second second	delta_linosene	-	linslool	-	alpha_humulene		alpha_bisabolol		beta_pinene	2/
RDST#6 RDST#7	5	2.16	2.62		-	delta_limonene		alpha_humulene	13.0		5.7	slpha_pinese	5.0	and the second se		beta_myrcene	3.2
RDST#8	4		2.81	delta_limonene beta_myrcene		delta_limonene		beta_myrcene linalool		linalool beta_carpophylle	8,4	alpha_humulene		beta_pinese alpha_humulene		alpha_bisabolol alpha_terpineol	2.
RDST #9	9		2.02			beta_carpophylle		siphs_humulone		delta_limonene	11.2	betheorimean	_	linalool	4.1		3.2
RDST #10	1	1.01	1.01	sipha_pincas		bota_myrcene		beta_caryophylle	15.2	and the second se	_	sipha_humelone		delta_limonene		lissiool	3.
RDST #11	1	1.47	1.47	beta_caryophylle		beta_myrcene		delta_limonene		linslool		alpha_humelene	7.6	the second s	4.4		2.
RDST #12	1	0.62	0.62	beta_myrcene	47.4	alpha_pinene	16.3	delta_limonene	3.7	beta_pinene	9.0	beta_caryophylle	5.8	linalool	3.4	siphs_humulene	13
RDST #13	3		2.25	beta_myrcene	37.3	delta_limonene	16.6	beta_caryophylle	10.4	alpha_pinens	9.2	beta_pissae		finalool	5.2	alpha_humulene	3.
RDST #14	1	the second s	1.62	delta_limosene		beta_caryophylle		linalool		beta_myrcene		alpha_humulene	8.2			alpha_pisese	2:
RDST #15	1	The second s		beta_myrcene		beta_caryophylle		delta_limonene		linalool		alpha_humulene		nerol	1.8		1/
RDST #16 RDST #17	1		2.43	delta_linoaene	1.000	beta_carpophylle		finalool		alpha_humulene	8.8	sipha_pinose	5.5		5.3	and the second se	3.4
RDST #18	2		2.43		31.1	alpha_humulene dolta_limonene		delta_limonene beta_myrcene	12.6	alpha_bicabolol alpha_humulene		beta_myrcene linalool	6.5 3.4	statement of the second s		slphs_terpiscol slphs_terpiscol	3.5
RDST #19	2		1.67	beta_caryophylic beta_caryophylic		delta_limonene		beta_myrcene		linalool		alpha_humulone		alpha_terpineol		beta_pisese	3.
RDST #20	3		2.27	beta_myrcene		linslool	_	beta_caryophylle	11.3	alpha_humulene	4.2	delta_limonene	4.0		1.6	and the second se	10
RDST #21	3		2.41	beta_myrcene	_	delta_limonene		beta_caryophylle		linalool	7.4	alpha_humulene	5.4	A CONTRACTOR OF	4.8		4.3
RDST #22	1	1.52	1.52	beta_caryophylle	30.6	delta_limonene	19.8	beta_myrcene	11.0	alpha_humulene	10.8	linatool	8.4	beta_pinese	3.8	siphs_terpineol	. 2.
RDST #23	1	1.54	1.54	beta_caryophylle	48.8	alpha_humulene	18.2	delta_limonene	14.1	linalool	7.1	beta_myrcene	1.9	beta_pinene	1.4	alpha_terpineol	12
RDST #24	1		1.53	delta_linosene		beta_myrcene		linalool	11.7	and the second se		beta_pisose	-	aerol	_	alpha_hemulene	23
RDST #25	1	1.0.0	1.38	delta_linosene		beta_caryophylle		linalool	17.6	A DESCRIPTION OF THE OWNER OWNER OF THE OWNER OWNER OF THE OWNER		slphs_hemelene	7.1		4.0	Contractory of the American States in succession	3.
RDST #26 RDST #27	2		2.03		38.4	and the second second second second second		beta_caryophylle	12.7	bota_ocimene		slpha_humulone		dolta_limonene	-	beta_pinens	4.3
RDST #28	2		2.11	delta_limonene		bota_caryophylle	20.6		16.3	and the second second second second		upha_humulone	5.4		4.2	linslool siphs_bissbolol	4.3
RDST #29	- 1	1.56	1.24	beta_caryophylle		beta_caryophylle beta_myrcene		linstool alpha_humulene	3.3	alpha_humulene alpha_bisabolol	6.8 3.7	beta_pisahe	5.9			delta_limonene	10
RDST #30	2		1.53	beta_myrcene		beta_caryophylle		delta_limonene	14.6	alpha_humulene		linglool	4.0	and the state of t	3.2	Contraction of the local division of the loc	1
RDST #31	4		2.21	beta_myrcene		beta_caryophylle	4.9	delta_limonene	4.8		4.7		_	linalool	_	alpha_humulene	1.1
RDST#32	1			beta_caryophylle	23.0	alpha_bisabolol		alpha_humulene	13.3	beta_myrcene	12,9	alpha_pincee	and the second sec	delta_limonene	3.3	bota pisess	2
RDST #33	1			beta_myrcene		delta_limonene	19.6	beta_caryophylle		alpha_humulene		alpha_terpineol		alpha_bicabolol	3.5	the second se	3.0
RDST #34	1		1.42	beta_caryophylle		beta_myrcene		siphs_humulone		linalool		delta_limonene		beta_pinese		alpha_terpineol	1.
RDST #35	2		2.47	delta_limosene	_	bota_myrcone		beta_caryophylle		alpha_humulene		beta pinone		alpha_terpincol		alpha_pinese	2
RDST #36 RDST #37	2		1.13	beta_myrcene		dolta_limonene beta_myrcene		linslool delta_linosene		bota_caryophylle alpha_humulene		beta_pisene slpha_bissbolol		alpha_humulene linslool		slpha_pinese slpha_terpineol	2.1
RDST#38	1			beta_caryophylle beta_myrcene		delta_limonene		beta_caryophylle		linalool		alpha_humulone		beta_pinene		sipha_terpineol	2.
RDST#39	1		1.87	delta_limonene		linalool		beta_caryophylle		beta_myrcene		beta_pisese		alpha_humulene		sipha_terpineol	4.3
RDST #40	2		1.52	beta_myrcene		beta_caryophylle		delta_limonene		alpàs_pineno		sipha_bisabolol		beta_pinese		lisalool	4.
RDST #42	1	1.09		beta_myrcene		delta_limonene		beta_caryophylle		linalool		sipha_bisabolol		beta pinese		alpha_humulene	3.2
RDST #43		2.00	2.56	beta_caryophylle		alpha_humulene	22.2	delta_limonene	_	linstool	2.8	beta_pinene	1.6	beta_myrcene		sipha_terpincol	1.
RDST #44	1			beta_myrcene		beta_caryophylle		delta_linosene		linslool	_	sipha_humulone	_	beta_pinene.		siphs_terpineol	2.1
RDST #45	1		1.22	delta_limosene		bota_myrcone		beta_pinese		bota_caryophylle	7.3			alpha_humulene		alpha_bisabolol	2
RDST #46 RDST #47	4			delta_linosene		beta_carpophylle		beta_myrcene		linslool		sipha_humelone		beta_pinene		siphs_birsbolol	_
RDST #48	- 1	0.92		beta_caryophylle beta_myrcene		beta_myrcene		alpha_humulene delta_limonene	_	alpha_bisabolol alpha_hunulene		delta_limonene linalool	_	linslool		siphs_terpineol	0.
RDST #49	1		2.23			beta_caryophylle delta_limonene		delta_limonene alpha_humulene		linalool		herol		beta_pinene beta_myrcene		alpha_terpineol	1
RDST #50	1		0.59	alpha_pinese		delta_limonene		beta_myrcene		beta pinene		beta piaces		beta_caryophylle	_	alpha_humulene	2
RDST #51	1	Concession in concession of		delta_limosene		beta_caryophylle		alpha_humulone		alpha_pineno		beta pieces		linalool		beta_myrcene	4.
RDST #52	2		2.22			delta_limonene		beta_caryophylle		linalool		upha_terpineol		alpha_humulene		beta_pisese	7.
DDGT #CO	1		1.67	delta_linosone	15.4	beta_caryophylle		beta_myrcene	5.4	linstool		siphs_humelone	2.9	beta, pinene	2.7	alpha, pinens	2)
RDST #53				sipha_humulone	214	delta_limonene	16.3	beta_myrcene	15.8	beta_carpophylle	10.1	linalool	37	alpha_terpincol	36	beta_pisons	3.
RDST#53 RDST#54 RDST#55	12			delta_limonene		beta_caryophylle		linalool		alpha_terpineol		sipha_humulone		beta_myrcene		beta_pisate	4.3