

Decoding Your CofA

Spencer Tielkemeier VP of Sales- North America

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Myrcene is a...

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What does H.S.I. stand for>

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Pre-2010



× Y	AKI	MA	CH	IEF	, Inc	•	ISO 9002 REGISTERE COMMAN BS EN ISO CERT. NO. 9
555 WEST SOUTH HILL ROAD	. POST OF	TCE BOX 2	09 . SUNNY	SIDE, WA	A 98944 . (50	09) 839-9022 . FAX	(509) 839-5570
	CERTI	FICATE	OF ANAL	YSIS			
PRODUCT NAME:	YC-Hop	Pellets					
MANUFACTURER:	Yakima Ch	ief, Inc. South Hill Ro	her				
		, WA 98944					
	Tel.:	+1-509-83					
	Fax:	+1-509-83					
LOT NUMBER:	P9-HLCL2	73					
VARIETY:	Cluster						
PRODUCT CODE:	YC-P90-20)					
		TYPICAL	ANALYSIS		ACTUAL	ANALYSIS	
ALPHA ACIDS ASSAY:		45.70	0% (w/w)		7	1%	
ALPHA ACIDS ASSAT:	IIV		y ASBC HOP	S-64	1.	1 70	
		DI LOTINO. D	y Abbe nor	0-0A			
BETA ACIDS ASSAY:		4.5 - 7.0	0% (w/w)		5.3	2%	
	UV		y ASBC HOP	S-6A			
LEAD:			0 ppm			sses test	
ARSENIC:			3 ppm			sses test	
CADMIUM:		< 0.0	03ppm		pa	sses test	

2010-2024



Р	022 Talus® Brand, HI ellets Best Use Before: October 2025	вс 692, туре 90 п	ob T	
	10.8	8.6	1.7	
	UV Alpha %	UV Beta %	Total Oil mL/100g	
ACIDS	OILS	OTHER	METHODS	FARM
UV Alpha: 10.8 %	Total Oil: 1.7%	HSI: 0.222	UV Alpha by ASBC HOPS UV Spectro - 6A	● <u>Perrault Farms, Inc</u>
HPLC Alpha: 8.5%	B-Pinene: 0.6 %	HPLC Cohumulone: 34.6%		
Mebak Alpha 7.5: 9.6 %	Myrcene: 36.3%	HPLC Colupulone: 63%	HPLC Alpha by EBC Analytica V 7.7	
HPLC Beta: 8.5%	Linalool: 0.5%	Moisture: 6.4%	Mebak Alpha 7.5 by EBC Analytica LCV V 7.5	
UV Beta: 8.6%	Caryophyllene: 11.1%	Spray Record Notes:	HPLC Beta by EBC Analytica V 7.7	
	Farnesene: 0.1%	Etoxazole was applied	UV Beta by ASBC HOPS Spectro - 6A	
	Humulene: 27%		Total Oils by ASBC Hops - 13 (%v/w)	
	Geraniol: 2.5%		Oil Profile by ASBC Hops - 17	
			Hop Storage Index by ASBC Hops - 12	
			HPLC by EBC Analytica V 7.7	

P92-HUTAL2079

2022 Talus® Brand, HBC 692, Type 90 Hop Pellets



Best Use Before: October 2025

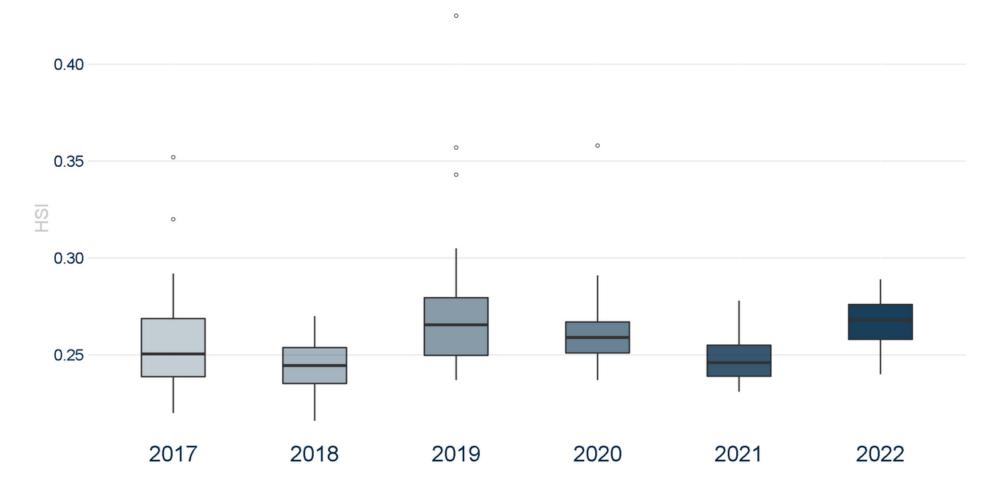
	10.8	8.6	1.7	
	UV Alpha %	UV Beta %	Total Oil mL/100g	
ACIDS	OILS	OTHER	METHODS	
V Alpha: 10.8 %	Total Oil: 1.7%	HSI: 0.222	UV Alpha by ASBC HOPS UV Spectro - 6A	Perrault Farms
PLC Alpha: 8.5%	B-Pinene: 0.6%	HPLC Cohumulone: 34.6%		
ebak Alpha 7.5: 9.6 %	Myrcene: 36.3%	HPLC Colupulone: 63%	HPLC Alpha by EBC Analytica V 7.7	
LC Beta: 8.5 %	Linalool: 0.5%	Moisture: 6.4%	Mebak Alpha 7.5 by EBC Analytica LCV V 7.5	
Beta: 8.6 %	Caryophyllene: 11.1% Spray Record Notes:	HPLC Beta by EBC Analytica V 7.7		
	Farnesene: 0.1%	Etoxazole was applied	UV Beta by ASBC HOPS Spectro - 6A	
	Humulene: 27%		Total Oils by ASBC Hops - 13 (%v/w)	
	Geraniol: 2.5%		Oil Profile by ASBC Hops - 17	
			Hop Storage Index by ASBC Hops - 12	

HPLC by EBC Analytica V 7.7





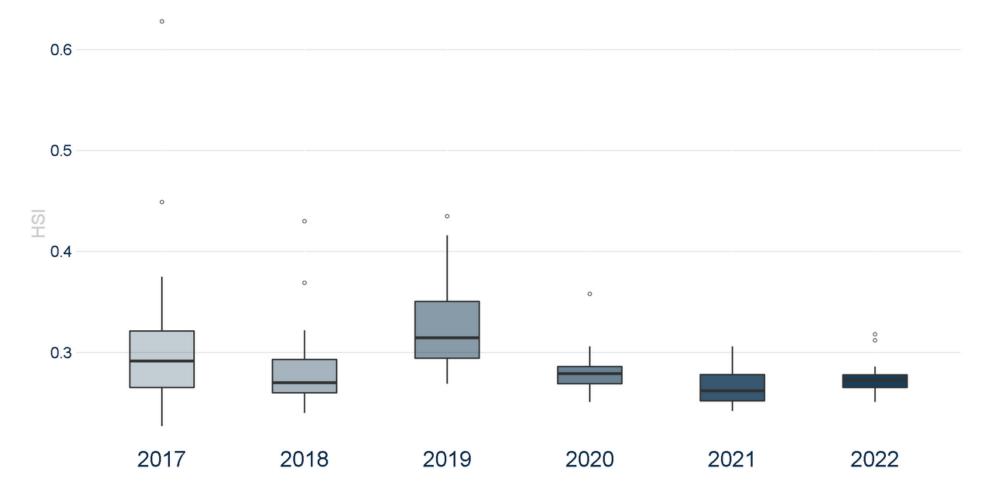
HSI Distribution by Year- Centennial Harvest Lot





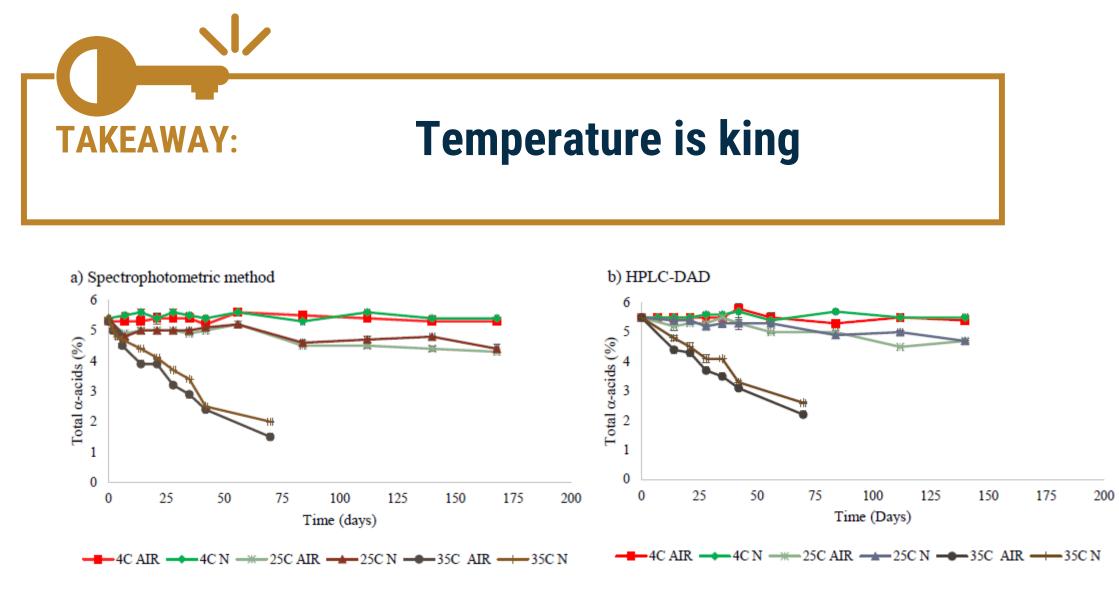


HSI Distribution by Year- Centennial T90





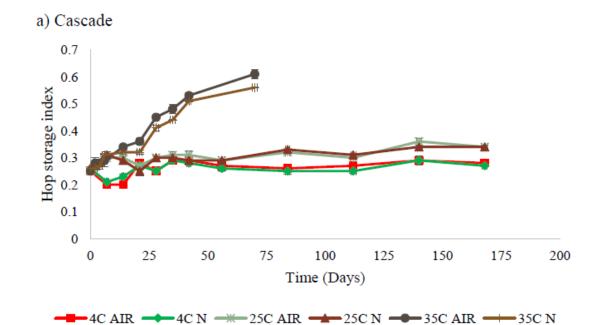
⊘ 0 ∓ 63 …



Timbo, G. M. (2020). Effects of Storage Conditions on α-Acid Degredation on Indiana Grown Hops (humulus lupulus) . *Purdue University* .







Timbo, G. M. (2020). Effects of Storage Conditions on α-Acid Degredation on Indiana Grown Hops (humulus lupulus) . *Purdue University* .



The Future...

JMC

The Future!

2021 Ahtanum[®] Brand • YCR 1 • T90 Hop Pellets

Best Use Before: December 2024 Farm(s): Perrault Farms, LLC, Carpenter Ranches, LLC

Q P91-GUAHT6358

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BREWING VALUES Percentage (%) UV ALPHA 5.3% UV BETA 1.0% HPLC ALPHA 60.0% HPLC BETA® 10.0% Grassy Grassy Vegetal Spicy Negetal Stone Fruit ISOBUTYR.TE 10.1 10.1 10.1 2 METHYLBUTYL ISOBUTYR 25.3	ALPHA ACIDS 5.3 vs Typical Variety Range	AROMA PROFILE	Intensity (%)	TOTAL OIL vs Typical Variety Range	0.9 mL/100g
BREWING VALUES Percentage (%) UV ALPHA 5.3% UV BETA 1.0% HPLC ALPHA 60.0% HPLC BETA® 10.0% MBLK ALPHA 0.2% Grassy Grassy Vegetal Stone Fruit ISSOBUTYL ISOBUTYRATE 10.1 2 METHYLBUTYL ISOBUTYRATE 10.1	3.9	Dried Fruit		0.0	3.0
UV BETA 1.0% HPLC ALPHA 60.0% HPLC BETA 10.% HPLC BETA 10.% Parts per Million (ppm) g ^A SOBUTYL ISOBUTYRATE 10.1 ISOBUTYL ISOBUTYRATE 10.1 Z METHYLBUTYL ISOBUTYR 25.3	BREWING VALUES Percentage (%)	Woody	Pioral	OIL COMPONENTS	Percentage (%)
HPLC ALPHA 60.0% HPLC BETA 10.0% MEBAK ALPHA 0.2% SURVIVABLE COMPOUNDS Parts per Million (ppm) g ^A ISOBUTYL ISOBUTYRATE 10.1 ISOBUTYL ISOBUTYRATE 10.1 2 METHYLBUTYL ISOBUTYR 25.3 The per Million (ppm) g ^A Pomme Stope Fruit Tropical Sweet Aromatic The per Million (ppm) g ^A ISOBUTYR 2 METHYLBUTYL ISOBUTYR Parts per Million (ppm) g ^A Pomme Stope Fruit Tropical Sweet Aromatic Image: Part Per Million (ppm) gram Pomme Stope Fruit Tropical Sweet Aromatic Image: Part Per Million (ppm) gram Pomme Stope Fruit Tropical Sweet Aromatic Image: Part Per	UV ALPHA 5.3%	Earthy	Herbal	B-PINENE 0.7%	
HPLC BETA® 10.0% MEBAK ALPHA 0.2% SURVIVABLE COMPOUNDS® Parts per Million (ppm) gA ISOBUTYL ISOBUTYRATE 10.1 ISOAMYL ISOBUTYRATE 10.1 2 METHYLBUTYL ISOBUTYR 25.3	UV BETA 1.0%			MYRCENE 60.0%	
MEBAK ALPHA 0.2% SURVIVABLE COMPOUNDS® Parts per Million (ppm) ga Vegetal Spicy Vogetal Spicy Pomme Stone Fruit Tropical Sweet Aromatic OTHER 29.%	HPLC ALPHA 60.0%			LINALOOL 0.2%	
SURVIVABLE COMPOUNDS® Parts per Million (ppm) ga ISOBUTYL ISOBUTYRATE L00° ISOAMYL ISOBUTYRATE 10.1 2 METHYLBUTYL ISOBUTYR, 25.3 Vegetal Spicy <	HPLC BETA® 10.0%	Grassy	Melon	CARYOPHYLLENE 10.0%	
SURVIVABLE COMPOUNDS® Parts per Million (ppm) g8 ISOBUTYL ISOBUTYRATE L00® ISOAMYL ISOBUTYRATE 10.1 2 METHYLBUTYL ISOBUTYR, 25.3 Image: Compound of the compound o	MEBAK ALPHA 0.2%		78411	FARNESENE 1.0%	
SURVIVABLE COMPOUNDS* Parts per Million (ppm) g* ISOBUTYL ISOBUTYRATE L0Q* ISOAMYL ISOBUTYRATE 10.1 2 METHYLBUTYL ISOBUTYR 25.3		Vegetal	Spicy	HUMULENE 20.0%	
ISOAMYL ISOBUTYRATE 10.1 Tropical Sweet Aromatic OTHER	SURVIVABLE COMPOUNDS Parts per Million (ppm)		Contraction	GERANIOL 0.6%	
2 METHYLBUTYL ISOBUTYR 25.3 OTHER	ISOBUTYL ISOBUTYRATE LOQ®	Pomme	Stone Fruit	OTHER 29.9%	
2 METHEDUTE ISODUTE 23.3	ISOAMYL ISOBUTYRATE 10.1	Tropical Sv	weet Aromatic		
	2 METHYLBUTYL ISOBUTYR 25.3			OTHER	
LINALOOL 37.7 TOP 5 AROMAS Highest to Lowest	LINALOOL 37.7	TOP 5 AROMAS	Highest to Lowest	HSI	0.233
	GERANIOL 12.6	TOP 3 AROMAS	righeat to Lowest	HPLC COHUMULONE	22.5%
2 NONANONE 16.4 Sector 16.4 HPLC COLUPULONE	2 NONANONE 16.4		A A	HPLC COLUPULONE	38.2%
METHYL GERANATE 71.7 MOISTURE	METHYL GERANATE 71.7		U	MOISTURE	9.6%
3 MERCAPTOHEXANOL LOQ [®] DRIED FRUIT BERRY CITRUS TROPICAL SPICY SPRAY RECORD NOTES Bifenazate was not a	3 MERCAPTOHEXANOL LOQ [®]	DRIED FRUIT BERRY CITRUS	TROPICAL SPICY	SPRAY RECORD NOTES	Bifenazate was not applied

Analysis Methods:

UV Alpha by ASBC HOPS UV Spectro - 6A, HPLC Alpha by EBC Analytica V 7.7, Mebak Alpha 7.5 by EBC Analytica LCV V 7.5, HPLC Beta by EBC Analytica V 7.7, UV Beta by ASBC HOPS Spectro - 6A, Total Oils by ASBC Hops - 13 (%v/w), Oil Profile by ASBC Hops - 17, Hop Storage Index by ASBC Hops - 12, HPLC by EBC Analytica V 7.7, ASBC HOPS - 4C

Terms of Use:

() YAKIMA CHIEF HOPS

- 1. The YCH R&D and Quality laboratories possess the capability to analyze hop oil via GCMS-SCD technology and quantify a vast array of aromatic components. This technology allows us to explore the aroma potential of novel hop compounds-specifically beersoluble compounds that survive the brewing process. For more information, view our Survivable Compounds Handbook.
- 2. Sensory characteristics are determined by averaging the percentage of assessors who reported the presence of each aroma category on a "Check-All-That-Apply" (CATA) ballot. It should be noted that the aroma profile of a hop does not necessarily translate to the flavor of a beer. For questions about YCH's Sensory Program, please contact your Regional Sales Manager or email sensory@yakimachief.com.

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About Us



Q P91-GUAHT6358





2021 Ahtanum[®] Brand • YCR 1 • T90 Hop Pellets

Best Use Before: December 2024 Farm(s): <u>Perrault Farms, LLC</u>, <u>Carpenter Ranches, LLC</u>

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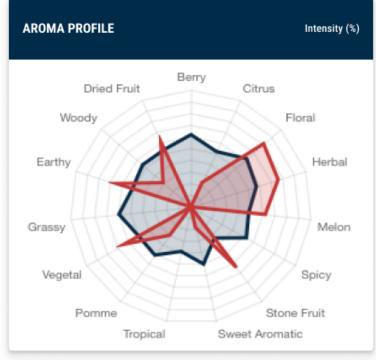
ALPHA ACIDS vs Typical Variety Range			5.3 UV Spectro
3.9			6.1
BREWING VALUES			Percentage (%
UV ALPHA	5.3%		
UV BETA	1.0%		
HPLC ALPHA	60.0%		
HPLC BETA	10.0%		
MEBAK ALPHA	0.2%	1	
SURVIVABLE COMPOUNI	DS [®]		Parts per Million (ppm) 🛛
ISOBUTYL ISOBUTYRATE	LOQ®		
ISOAMYL ISOBUTYRATE	10.1		
2 METHYLBUTYL ISOBUTYR	25.3		
LINALOOL	37.7		
GERANIOL	12.6		
2 NONANONE	16.4		

71.7

LOQ®

METHYL GERANATE

3 MERCAPTOHEXANOL





TOTAL OIL vs Typical Variety Range		0.9 mL/100g
0.0	+	3.0
OIL COMPONENTS		Percentage (%)
B-PINENE	0.7%	
MYRCENE	60.0%	
LINALOOL	0.2%	
CARYOPHYLLENE	10.0%	
FARNESENE	1.0%	
	20.0%	
HUMULENE		
HUMULENE GERANIOL	0.6%	

OTHER	
HSI	0.233
HPLC COHUMULONE	22.5%
HPLC COLUPULONE	38.2%
MOISTURE	9.6%
SPRAY RECORD NOTES	Bifenazate was not applied

Survivables



- Beer-soluble compounds
- Monoterpene alcohols, esters, and thiols
- Describe quantity, not quality

SURVIVABLE COMPOUND	Parts per Million (ppm)	82	
ISOBUTYL ISOBUTYRATE	LOQ		
ISOAMYL ISOBUTYRATE	10.1		
2 METHYLBUTYL ISOBUTYR	25.3		
LINALOOL	37.7		
GERANIOL	12.6		
2 NONANONE	16.4		
METHYL GERANATE	71.7		
3 MERCAPTOHEXANOL	LOQ		



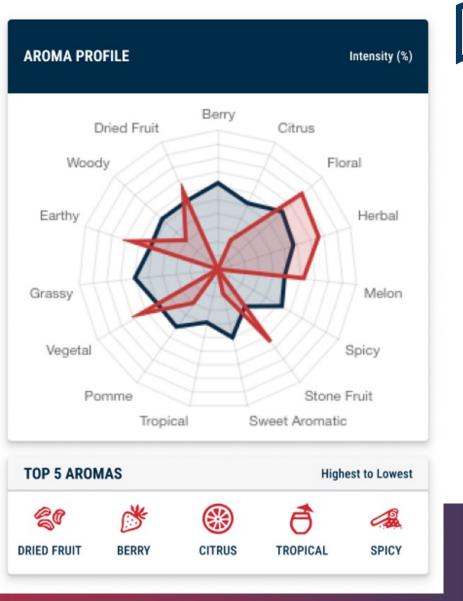


For a comprehensive treatment of "Survivables," visit:

https://hopandbrewschool.com/

Sensory

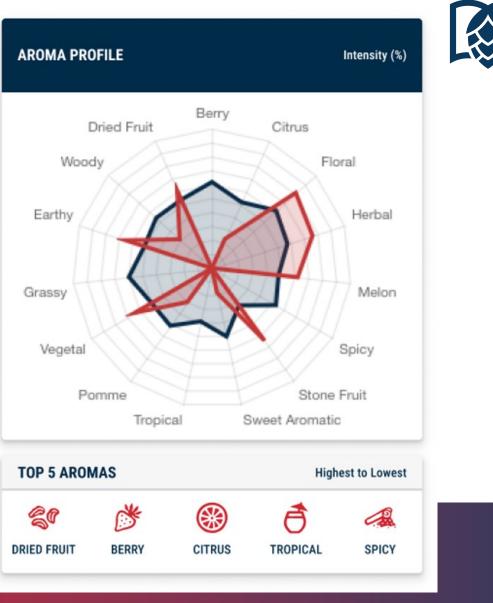
- Professional assessment of <u>raw</u> <u>hop</u> aromas
- Describes qualit(ies) of aroma in raw hop, not ideal for describing quantity in beer
- Useful in comparing multiple lots





Sensory

• One of <u>several</u> useful ways of evaluating hop quality







Please download and install the Slido app on all computers you use





What gets you most excited about the future of hop CofAs?

(i) Start presenting to display the poll results on this slide.

