



**GREAT BEER
GROWS HERE.**

SUSTAINABILITY REPORT 2016





**CONNECTING FAMILY FARMS
TO THE WORLD'S FINEST BREWERS.**

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STEPHEN B. CARPENTER
INTERIM CHIEF EXECUTIVE OFFICER
PRESIDENT

FOREWORD

Our journey to embed sustainability into YCH's culture is inspired by a generational connection to the land our growers nurture and till, the communities in which we live and work, and the people who work alongside us in the supply chain so that at the end of the day, we can hoist a pint in celebration of life. By publicly setting sustainability goals and holding ourselves accountable for achieving them, we embrace the notion that every decision we make either brings us closer to a sustainable future or farther away.

The story of our journey is outlined on the pages of this report. We have progressed in many areas since the last report and where progress has been slow, accelerated plans have been established. Every dollar we spend, every minute we live, and every decision we make is a vote for what we want our future to become. Our vision is to be a responsible neighbor, an asset to our communities, and to enrich the lives of all we encounter.

Enjoy the report, and thank you for being part of our journey towards sustainability.

Cheers,



DESIGNING A SUSTAINABLE

HOP SUPPLY SYSTEM



OUR APPROACH TO SUSTAINABILITY

We believe that the true meaning of sustainability is to meet the needs of the present without compromising the ability of future generations to meet their own needs.

After all, so many of our growers have been farming the same lands for generations with the hopes of passing on those same opportunities to their children and grandchildren. They will be the first to tell you that a farmer must nurture all aspects of their operations in order to thrive - from the land they harvest to the workers they employ.

As a grower-owned company, we have sought to honor those values by addressing the pillars of sustainability vital to our business: people, planet, product and process. Through our mission to connect family farms with the world's finest brewers, we create a supply system that offers value through long-term growth and stability for both our suppliers and customers.

Sustainability is intricately entwined in quantitative and qualitative growth, both of which are deeply embraced by brewers and hop farmers, as we continually seek to improve our products and endlessly innovate. So what happens when the availability of quality beer and hops becomes the status quo? Do we cease to grow? No, we get better at the other aspects of business, such as how we operate and how we support life in the places we serve. Here is where quality bleeds into the realm of sustainability – quality of work and quality of place are equivalent to sustainable livelihoods and sustaining our environment.

In order to realize this long-term sustainability and growth for both the hop and beer industries, we support collaboration between hop growers and breweries. For those thousands of deeply passionate people who have joined the craft beer industry in the past decade, it may be hard to believe that until very

recently, communication between farmers and brewers was nearly nonexistent and mediated exclusively by brokers. Needless to say those times have changed. Each harvest brings to the Pacific Northwest not only a bounty of hops, but brewers and beer enthusiasts from all over the world. These visitors come to learn about the farms and facilities, select lots from the new crop year, and share their beers with the growers that developed and supply their favorite hops.

By publishing this report, we seek to strengthen our connection to our growers, customers and communities through transparent communication surrounding the progress of our existing initiatives, and aspirations for the future.

The 2015 Sustainability Report set forth ambitious goals. Some were achieved, some are a work in progress and others were reassessed in order to capture the full scope of our company's vision for sustainability. Lessons learned regarding progress towards 2015 goals will be discussed in detail throughout the report.

“THIS ISN'T ABOUT THE NEXT FIVE YEARS; THIS IS ABOUT THE NEXT 50 YEARS. FOR THREE GENERATIONS FROM NOW”

– STEVE PERRAULT



2015 GOALS ACHIEVED



ACHIEVED ISO 14001 CERTIFICATION

YCH is now certified company-wide for environmental management systems.



CREATED A QUALITY INDEX

The quality index is used for measuring overall quality of each lot. This data can help to develop standards and incentives for growers to measure progress and reward performance.



CREATED ONLINE LOT ANALYSIS TOOL

This online tool is available for access as of the 2016 harvest.

YCH's new sustainability overview is presented as overarching goals that address people, planet, product, and process. Within each category, there are strategic goals proposed to guide and support progress while engaging many different YCH departments. The strategic goals can be found in the specific categorized sections of this report.

2016 GOALS

PEOPLE

- **IMPROVE** overall employee satisfaction to 4.5 out of 5
- **ESTABLISH** processes to increase financial or in-kind support of organizations in our communities that support environmental restoration, education, or health, especially for those that serve farm workers
- **ENHANCE** stakeholder engagement by striving for representation and inclusion of diversity through all levels of YCH

PLANET

- **GATHER** and compare information from grower-owner farms regarding environmental and social practices using the Sustainable Agricultural Initiative's (SAI) Farm Sustainability Assessment
- **MAINTAIN** company-wide ISO 14001 certification for environmental management systems and move towards ISO 14001:2015 certification
- **GATHER** water footprint data for grower-owners
- **REDUCE** YCH carbon-dioxide emissions by 50%
- **GENERATE** 5% of electrical consumption from on-site solar technology

PRODUCT & PROCESS

- **REVIEW** individual grower feedback reports with each farm
- **IMPLEMENT** a strategic plan for YCH food safety programs
- **IMPROVE** overall customer satisfaction with YCH by 10%

ABOUT THIS SUSTAINABILITY REPORT



As part of a long term commitment to annual reports, Yakima Chief – Hopunion’s (YCH) 2015 Sustainability Report marked the first contribution consistent with Global Reporting Initiative (GRI) standards.

GRI is an international, independent organization that helps businesses, governments, and other organizations understand and communicate the impact of their business on critical sustainability issues such as climate change, human rights and corruption. By adopting the GRI format, we are held accountable for conducting a structured and in-depth analysis of all areas of operations and the supply chain. YCH will use information gained from this investigation to benchmark key metrics that track trends on a continuous basis and allow for strategic goals to be set in our company.

By participating in GRI reporting, we are part of an ongoing global conversation with corporate peers focused on sustainability strategies, challenges and successes.

The 2016 Sustainability Report has been prepared in accordance with the GRI core. At this time, we are not seeking external assurance. The reporting period is based on our fiscal year (August 1, 2015 to July 31, 2016) during which we harvest and process one crop year of hops.

The content of this report was created by department representatives and compiled by members of the Quality and Sustainability Department with oversight from the Executive and Leadership Teams. An index according to GRI standards can be found online at ychhops.com.



MEASURING OUR IMPACT

WHAT WE MEASURE



ENVIRONMENTAL

- ☒ Materials
- ☒ Energy
- ☒ Water
- ☒ Biodiversity
- ☒ Emissions
- ☒ Effluent & Waste
- ☒ Environmental Compliance
- ☒ Transportation



SOCIAL

- ☒ Equal Pay
- ☒ Employee Wages
- ☒ Philanthropy
- ☒ Health & Safety
- ☒ Training & Education



ECONOMIC

- ☒ Food Safety
- ☒ Economic Performance
- ☒ Customer Satisfaction

As a leading global hop supplier, our operations have significant influence across the supply chain. While YCH does not directly own any farms, we have identified key aspects that address impacts associated with our growers, our facilities and our customers. We are working with stakeholders to measure and mitigate the most significant impacts of our organization.

OUR STAKEHOLDERS

PRIMARY STAKEHOLDERS

**Brewers
Employees
Growers**

**Beer Drinkers, Farm Workers
& Local Communities**


Governments & Wider Society

Environment

Each year, we examine the extent of our environmental, social and economic impacts, along with the entities they affect. These entities are our stakeholders and are categorized by their direct level of influence on our products and processes as well as our influence on them. Employees, hop suppliers, and brewing customers are primary stakeholders and hold the greatest influence. Direct influence decreases as stakeholder categories become increasingly removed.



OUR COMPANY



Formed in 2014, Yakima Chief – Hopunion is a 100% grower-owned, global hop supplier focused on providing premium quality hops and uncompromising service. Our team is driven by a profound appreciation for our natural resources and a heartfelt respect for the communities and customers we serve.

OUR MISSION, VISION, VALUES

As a 100% grower-owned supplier, we are uniquely positioned to establish and promote strong relationships between our growers and brewing customers.

For this reason, our mission is to connect family farms with the world's finest brewers, providing the highest quality hop products and uncompromising service for the ultimate benefit of our customers, employees and growers.

Our vision extends this passion for quality and connection, and defines us as the global hop supplier of choice, focused on sustainable production of innovative hop products. We are a responsible neighbor and asset to our communities, enriching the products, businesses and lives of everyone we encounter.

For our staff, being a valuable contributor to the customers and communities we serve means that we view our responsibilities holistically. We engage with our entire supply chain to drive improvement and maximize value for our people, planet and products. The core values contained within our PRIDE statement help define our focus and demonstrate our priorities as a team. At the end of the day, they are more than just words; they are the cornerstone of our approach to delivering premium quality hops.

PASSION: For people, product, planet and process.

RESPECT: Teamwork and collective responsibility.

INTEGRITY: Transparency and accountability in all we do.

DEDICATION: To quality and sustainability.

EXCELLENCE: An emphasis on innovation and continuous improvement.



MISSION

To connect family farms with the world's finest brewers, providing the highest quality hop products and uncompromising service for the ultimate benefit of our customers, employees and growers.



VISION

We are the global hop supplier of choice, focused on sustainably produced, innovative hop products. We are a responsible neighbor and asset to our communities, enriching the products, businesses, and lives of everyone we encounter.



VALUES

Passion, Respect, Integrity, Dedication, Excellence

PROUD TO BE 100% GROWER OWNED

In honor of our family farms and beer's agricultural roots, we like to say that "Great Beer Grows Here." Each of our family-owned hop farms are as unique as the varieties they cultivate, and we take pride in being able to share their stories and tell the history of their farms. From their advanced farming techniques, to their recently updated, state-of-the-art production facilities, our growers consistently demonstrate an unparalleled commitment to continuous improvement and sustainability. It's no secret to us that quality begins in the field, and that it is our owners' rich hop farming heritage that provides us with an invaluable foundation of knowledge for delivering the highest quality products and services.

Yakima Chief – Hopunion's owners represent family-owned farms in Washington State and Oregon.

YCH GROWER - OWNERS



**REGGIE
BRULOTTE**

BRULOTTE FARMS
6th Generation



**MIKE
SMITH**

B.T. LOFTUS RANCHES
3rd Generation



**KEITH
HOUSER**

C & C HOP FARMS
3rd Generation



**CRAIG
CARPENTER**

CARPENTER RANCHES
5th Generation



**PATRICK
GASELING**

GASELING RANCHES
4th Generation



**STEVE
PERRAULT**

PERRAULT FARMS
3rd Generation



**RICK
SAUVE**

SAUVE & SON FARMS
3rd Generation



**RICH
VAN HORN**

VAN HORN FARMS
2nd Generation



**CHARLIE
DAVIDSON**

3D & BC HOP FARMS
4th Generation



**DOUG
WEATHERS**

SODBUSTER FARMS
3rd Generation

* COLEMAN RANCHES, OREGON NOT SHOWN

A MESSAGE FROM OUR OWNERS

Chief Seattle (Si'ahl) was credited with saying, "We do not inherit the earth from our ancestors; we borrow it from our children." Those words of wisdom capture the spirit of our generational commitment to the land we cultivate and nurture to grow hops. Most of us are farming land that our grandparents and great grandparents farmed and we have an uncompromising commitment to leaving the land in good health to subsequent generations. We hold ourselves accountable to living up to that commitment by establishing sustainability goals for our farms and for Yakima Chief - Hopunion.

But our commitment to sustainability doesn't end with environmental stewardship. We strive to be good neighbors in the communities in which we live and work and responsible employers to the good people who work beside us to produce our crops.

We consider Yakima Chief - Hopunion to be an extension of our farms and we want our commitment to sustainability to be reflected in everything we do and in every product we produce. Our vision is to be a responsible neighbor and asset to our communities, enriching the products, businesses, and lives of everyone we encounter.

This report outlines our progress towards achieving that sustainability vision.





ECONOMIC IMPACTS

As a grower-owned company, all of our business decisions are driven by a responsibility to maintain industry leading returns to growers and help ensure the financial stability of our local economies. Sustainable returns allow farms to invest in land, facilities and personnel, and expand operations to meet demand for responsibly-produced hops.

**95% OF YCH HOPS
WERE SOURCED FROM
WASHINGTON, OREGON
& IDAHO FARMS.**

**75% OF NON-PRODUCT
RELATED PURCHASES
WERE SOURCED FROM
PNW VENDORS &
SUPPLIERS.**





2016 FINANCIAL DISTRIBUTIONS

FOR EVERY 1 POUND OF HOPS WE SELL, 77% OF THE RESULTING REVENUE IS RETURNED TO GROWERS.



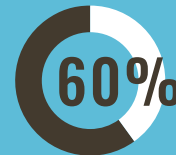
As a privately-held company, YCH chooses not to fully disclose details of financial distribution. Limited disclosure is out of respect for our grower owners' privacy and protection of internal strategies. The percentage of YCH's financial distributions towards various categories and projects are disclosed in order to illustrate our commitment to reinvestment in operations, employees and communities.



YCH IMPACTS

17

2015 CAPITAL EXPENDITURES



PHASE 1 SUNNYSIDE FINISHED GOODS WAREHOUSE

This warehouse holds inventory prior to shipping. With an efficient layout and modern amenities, YCH will be able to process and ship orders with increased speed and accuracy.



IMPROVEMENTS TO R&D AND PELLET LINES

Improvements to the pellet line were targeted to increase throughput, enhance product quality and assure employee safety.



NEW STORAGE WAREHOUSE FOR BALES

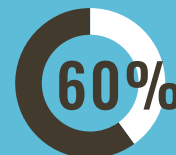
Increasing cold storage capabilities ensures an increasing supply of whole leaf hops can be stored in optimal storage conditions prior to processing.



IN-HOUSE LABORATORY

Upgrades were made to the equipment and overall YCH laboratory facility. YCH uses the latest testing techniques to ensure each hop product is the industry standard for quality.

2016 CAPITAL EXPENDITURES



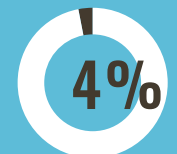
PHASE 2 SUNNYSIDE FINISHED GOODS WAREHOUSE



NEW STORAGE WAREHOUSE FOR BALES



IMPROVEMENTS TO R&D AND PELLET LINES



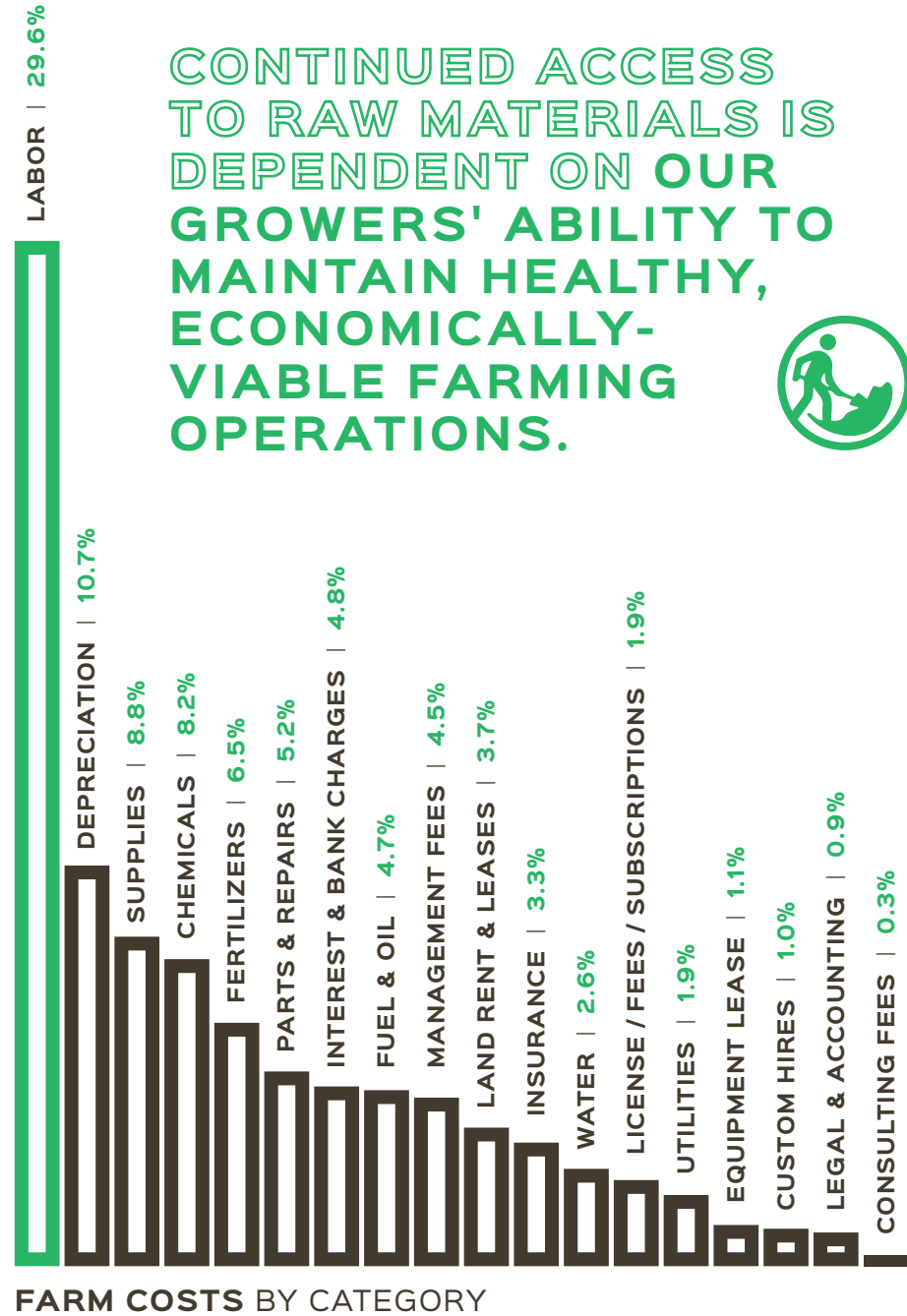
SOLAR ENERGY PROJECT

Over the past year, YCH has made significant investments in infrastructure, including adding more than 76,000 square feet to our Sunnyside campus through the construction of several new buildings. The budget for capital expenditures is approved on a calendar year schedule and can be accounted for within our operating costs.

FARM IMPACTS

We conduct an annual cost survey of farm-based, economic impacts. This survey serves several key functions:

- 1. FACILITATE** collaboration between hop farms and YCH to better understand production costs and provide guidance for individual business plans to increase operational efficiency.
- 2. CREATE** a baseline metric for our sustainable pricing program, allowing contract pricing for eligible breweries to be adjusted based on annual changes in production costs.
- 3. ESTABLISH** annual Cost Per Acre metrics that allow growers and YCH to prepare for proposed farm expansions and budget any associated costs.



TOP CUTTER



BOTTOM CUTTER



PERRAULT HARVESTER



Hops are a relatively-niche, specialty crop. As a result, many growers have responded to ever-changing technology needs by fabricating custom-designed farm equipment. Above are three examples of custom hop-specific machinery developed in the Yakima Valley.



IMPROVING THE CONNECTION

TOP 3 RECOMMENDATIONS

BASED ON BREWER FEEDBACK

1. Expand Farm Visits / Tours
2. Include Farm Origin On Product Labels
3. Newsletters / Updates About Growers

HOW WE RESPONDED IN 2015/16

- | | |
|---|--|
| ✓ ONLINE LOT ANALYSIS LOOKUP
COMPLETED | ✓ REVAMPED COMPANY NEWSLETTERS
DELIVERED |
| ✓ FARM-FOCUSED SOCIAL MEDIA
ONGOING | ✓ HOP & BREW SCHOOL EXTRACT FACILITY TOUR
INCLUDED |
| ✓ FARM-FOCUSED COMPANY WEBSITE
LAUNCHED | ✓ ONLINE PRODUCT REVIEWS
ONGOING |
| | ✓ GROWER-OWNERS AT EVENTS
ONGOING |

GOALS FOR 2016/17

- ☐ Expand farm tour options at Hop & Brew School
- ☐ Increase grower-owner presence at YCH HOPS events
- ☐ Launch “Grower Highlight” segment in quarterly newsletters
- ☐ Incorporate 3+ grower-owners as guest authors in HopWire blog
- ☐ Increase grower involvement in social media
- ☐ Incorporate origin into lot analysis lookup

BREWER IMPACTS

At the core of our business model is the ambition to be a company that truly puts customers first. We are cognizant of the role we play in our customers' ability to produce quality beer and do not take the responsibility of engagement lightly. Through daily interactions and annual satisfaction surveys, our customers provide valuable feedback that allows our team to adapt to changing needs and foster strong relationships with shared visions for sustainable growth.



CONTINUALLY IMPROVING

“HOW CAN YCH IMPROVE?”
325 BREWERS ANSWERED

TOP 3 RECOMMENDATIONS

1. **Improve Response Time & Follow Up**
2. **Increase Variety & Volume Availability**
3. **Streamline the Contracting Process**

HOW WE RESPONDED IN 2015/2016



PLANNING DEPARTMENT
CREATED



LOGISTICS MANAGER
HIRED



COMPREHENSIVE KAIZEN EVENT
CONDUCTED



FIELD PROCUREMENT MANAGER
HIRED



INTERNAL INVENTORY DASHBOARDS
CREATED



CUSTOMER EXPERIENCE IMPROVEMENT TEAM
PROPOSED

GOALS FOR 2016 / 2017

- Increase Order Turnaround - 24hr shipping / 48hr for transfers
- 20% Response Rate of Customer Satisfaction Survey
- +10% Overall Customer Satisfaction
- +11% Satisfaction in Frequency of Communication
- +13% Satisfaction with Ease of Contracting / Helpfulness of Staff
- +12% Satisfaction of Hop Varieties & Volumes Available
- +17% Perception of Customer Service VS Other Suppliers
- >50% Satisfaction in Product Quality VS Other Suppliers

CUSTOMER ENGAGEMENT

HOP & BREW SCHOOL 2015

There are many ways we aim to connect with our customers, but with breweries across the globe, our customer interaction is often limited to digital media. For this reason, harvest season is our most exciting time of year. As the new crop arrives, we open our doors to more than 1,000 brewers and beer enthusiasts, 300 of which attend our annual Hop & Brew School event. This event, combined with Hop Selection, allows our staff to have face-to-face interactions with current and potential customers and is a priceless opportunity to build lasting relationships.

Hop and Brew School includes two, two-day sessions tailored to commercial and home brewers. Each morning, attendees experience presentations from award-winning brewers, hop growers, and industry experts covering a variety of relevant topics which vary from year to year. During the afternoon, attendees head off campus to receive guided tours of our production facilities as well as tours of our grower-owners' farms. Together these create a comprehensive and immersive hop-harvest experience.

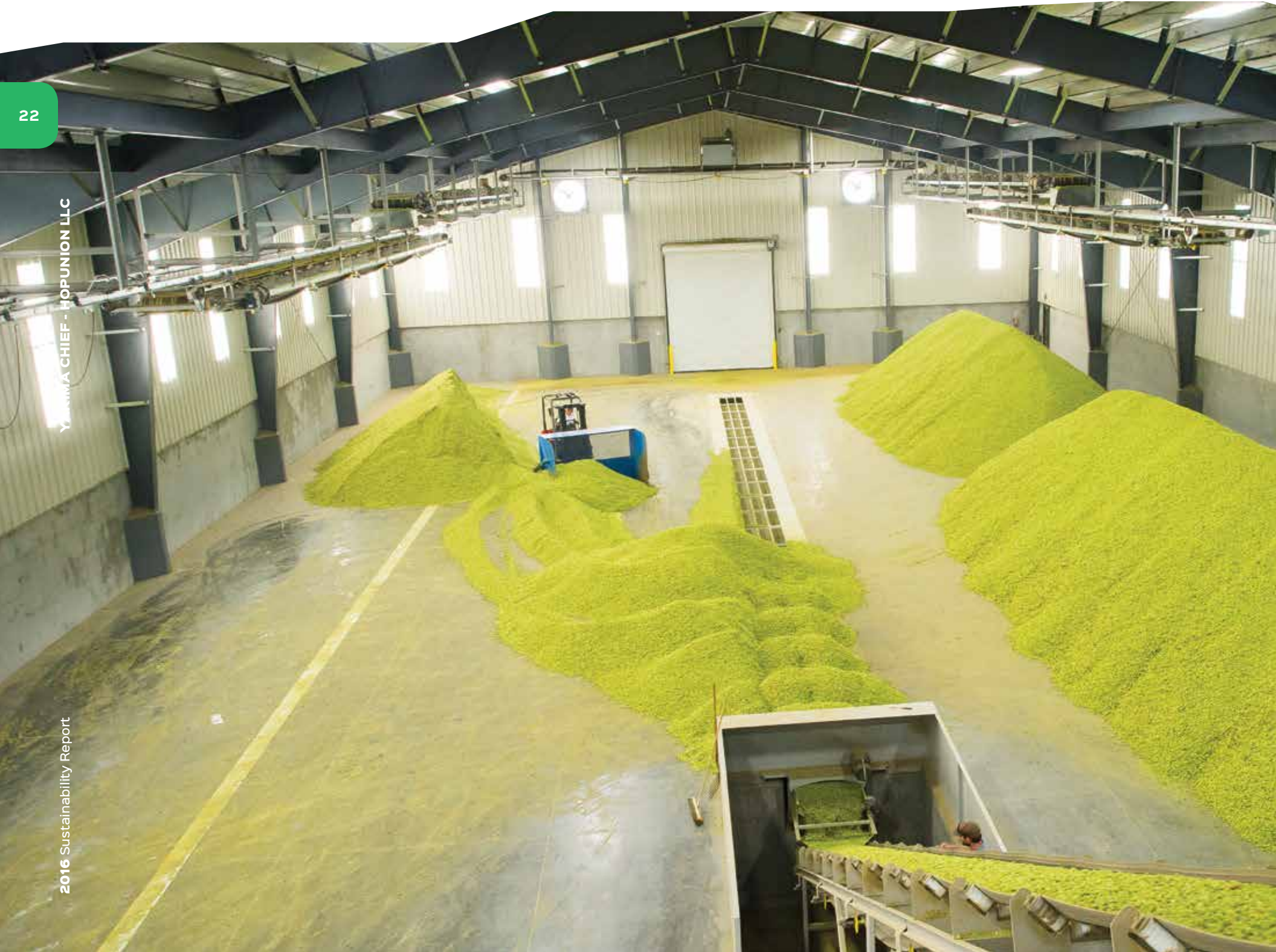
Throughout Hop & Brew School, members of our staff volunteer their time to lead tours, give presentations and engage with attendees. Participants are able to get to know the faces of YCH, share a meal (or beer) with our staff and ask questions. In 2015, more than 50 full-time staff members volunteered, allowing new and experienced staff alike to build relationships, receive feedback, and learn more about the markets we serve.

Post event, a survey is distributed to attendees to evaluate their experience and gather feedback to improve future schools. Measuring the previous year's progress in our 2016 report, the 2015 Hop & Brew School saw the addition of production tours through our Sunnyside extract facility as a result of event survey feedback. Increasing the visibility of our operations not only helps increase visibility of our entire staff, but allows attendees to capture a more comprehensive view of our production capabilities and product offerings.

As we move forward, Hop and Brew School will continue to evolve to meet the needs of our customers. We strive to connect and engage with our customers through this event and hope that it provides a fun, educational environment for growers, our employees and brewers to celebrate the harvest season together.



Jason Perrault leading tour through his experimental hop yard.





OUR VALUE CYCLE

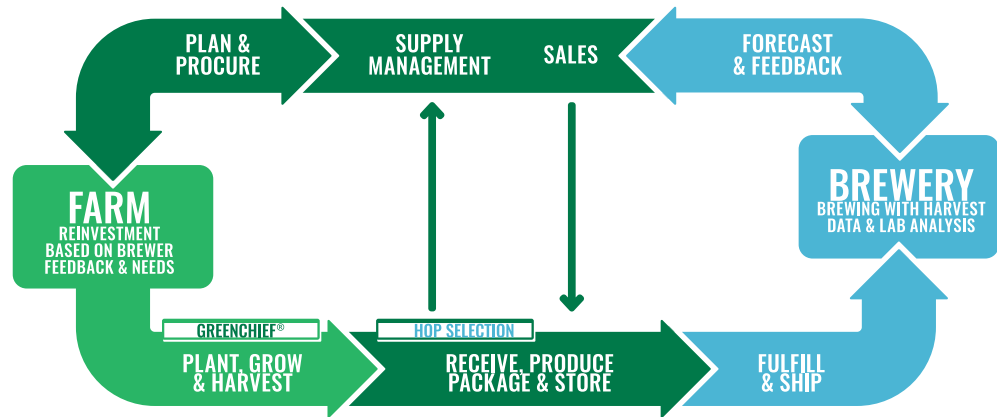
Hops are a perennial plant that can take up to two years to establish and benefit from long replanting cycles of five or more years. It could take up to 18 months for a grower to respond to changes in demand by expanding or altering their lands and varieties. This makes the supply of hops relatively inelastic. The demand for varieties, products and quality is dictated by brewers, but the supply is dependent on growers. Without a clear line of communication between these two parties, both are unable to reach a stable state.

So how do hop growers and brewers communicate? This is where we come in. We continuously translate data from both growers and brewers and synthesize it into value added solutions for both parties. We describe our value chain as cyclical because we rely on our transparent partnerships with both customers and suppliers to sustainably manage our product inventory for the coming years. Responsible planning for all parties is key to ensure the long-term stability of our growers, customers and company.

Anticipating and planning for fluctuations in supply and demand are the cornerstone of forecasting and projections. We understand the ability to forecast is not an inherent skill for many growers or brewers. Through our sales and planning departments, we offer this service to our suppliers and customers with their best interest in mind so they can focus on brewing beer and growing hops.

YCH VALUE CYCLE

Our value cycle shows how we use two-way communication to plan and manage supply between growers and brewers. The bottom of the cycle shows the flow of hops from farms, through our operations and out to brewers. We use two programs, GreenChief® and Hop Selection, to communicate harvest quality back to farms to help growers form best practices which produce more sustainable, higher quality hops.



PLANNING DEPARTMENT

Following the 2015 Customer Satisfaction survey, our executive team recognized the opportunity to create a unique department responsible for responding to customer concerns and anticipating evolving needs in the grower and brewer communities. Driven by the feedback received through the survey, the Planning Department formed their overall mission and subsequently developed strategic, measurable objectives.

With a strong focus on creating a sustainable supply chain system, the Planning Department aims to maintain a balance between supply and demand, more specifically a balance among and between grower and brewer needs. Internally at YCH, they work to improve efficiency, profitability and inventory turnover, and provide an ongoing service to other departments by utilizing data to create resources that aid in the strategic decision making process.

The Planning team performs analyses on operating trends to give leaders of the Operations Department reliable data upon which to make strategic decisions in areas such as staffing and expansion. They also work with Sales staff members to assess new and existing contracts to identify potential viability concerns. In addition to advising on matters of availability with Sales staff, Planning regularly reviews a multitude

of factors, including customers' inventory ship rates, current contract volume, and historical barrelage growth. This allows them to build forecasts and make projection recommendations for customers' hop product needs as a value added service to assist brewers in purchasing one of their most important raw ingredients.

Offering hop supply projection guidance to brewers not only benefits our customers, but our growers as well. With realistic future contracts in place, the Planning Department is able to provide growers with accurate need projections to satisfy brewer needs. In addition, they also communicate with growers through our procurement staff to help translate consolidated demand data trends in the industry.

Since its creation, our Planning Department has proven to be a valuable addition to our organization, working across the supply chain as well as interdepartmentally to improve collaboration and transparency. The Planning team helps maintain our strong connection between growers and brewers by building a balanced and sustainable relationship between supply and demand.

SOURCING

Our hop sourcing strategy is the result of years of experience and feedback from both growers and brewers. The ability to source sustainably produced hops from a diverse grower base is an important function of YCH. Hops are purchased from growers through two channels:

CONSIGNMENT

When a grower delivers hops on consignment, YCH does not take ownership of the hops but instead enters them into a "pool" with all other consignments of that variety. As YCH sells the variety, it then distributes the proceeds after our sales commission to the farms with hops in the pool. The payment the grower receives is determined by YCH's average sales price, meaning when prices go up, the grower makes more money and when they go down, they make less. The amount paid to YCH is set by the farms on our Board of Directors.

CONTRACTS

This is a more traditional sourcing model available to growers outside of our ownership, in which YCH sources a limited amount of hops on a fixed-price basis. This price is negotiated between YCH and the grower. YCH profits are the difference between grower contract and at what price we're able to sell the hops. This creates an incentive to buy low and sell high, which is not ideal for either growers or brewers. Conversely, if a variety falls out of favor and the sale price to breweries decreases, YCH must absorb the difference.

GROWERS CONSIGNMENT

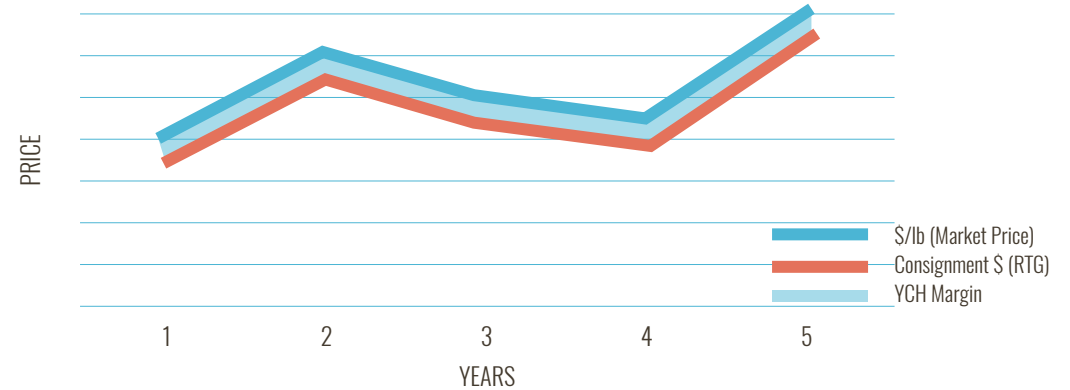


Figure 1. Sourcing from growers through a consignment system spreads out supply and demand risks across many growers. The shaded area between lines represents the consistent margin YCH takes as a processor and distributor.

GROWERS CONTRACT

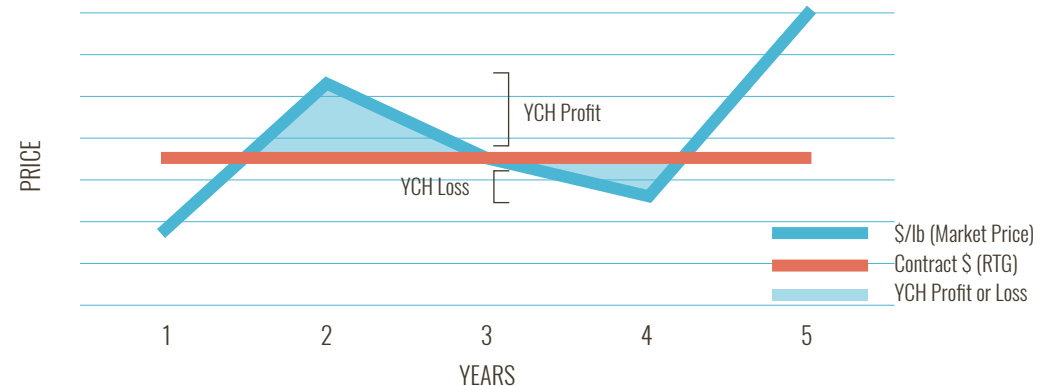


Figure 2. Sourcing from growers through contract could mean greater risk for YCH operations. The shaded region between lines represents either the loss or profit YCH can expect to make with changing market demand and price for varieties.

PERCENT OF HOPS OWNERS VS NON-OWNERS

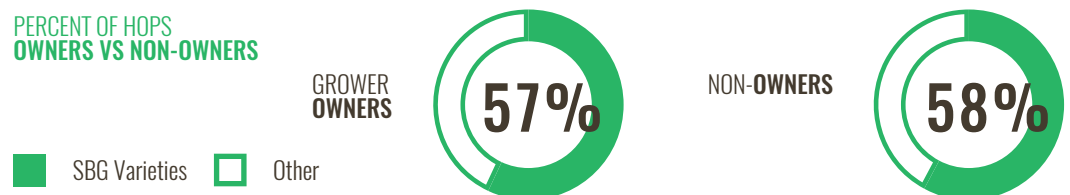


Figure 3. Proportion of hops sourced from YCH grower-owners vs. non-owners.

COLLABORATION WITH SELECT BOTANICALS GROUP

One of YCH's greatest assets is our partnership with Select Botanicals Group LLC (SBG), a member company of Hop Breeding Company LLC (HBC). Through our symbiotic relationship with SBG, we can provide our customers with innovative hop varieties such as Citra® (HBC 394), Mosaic™ (HBC 369) and Simcoe® (YCR 14), while offering SBG a channel to process and distribute their hops. SBG and YCH work together closely to manage the production and reliable availability of high profile varieties. YCH's exclusive contracts with SBG were forged out of a longstanding trust between ownerships, and continue to provide value to both companies, our growers and customers.

YCH VARIETIES

Our hop variety mix has evolved in response to the popularity of new varieties that outcompete more traditional hops on flavor, yield, price, or disease and drought resistance.

Though historically the U.S. was a powerhouse for high alpha varieties, growing priority has switched to focus on aroma varieties, many of which were developed in the last five years.

While we have over 100 varieties in our 2016 catalog, 16 varieties made up 95% of our sourced volume. The remaining 5% is accounted for by legacy varieties from the U.S. and Europe and some specialty hops that have yet to establish a foothold in the market.

The limited sourcing of certain specialty varieties is not due to our lack of confidence and enthusiasm for the product, but rather our proactive approach to risk-management. When advising growers on what varieties to plant for the upcoming years, we must balance many factors including grower returns per acre, yield, disease resistance and viability. For this reason, even some traditionally high demand hops have been phased out in favor of newer varieties. The goal of both hop breeding and sourcing is to promote sustainable varieties that help create great beer, while providing reliable returns to growers.

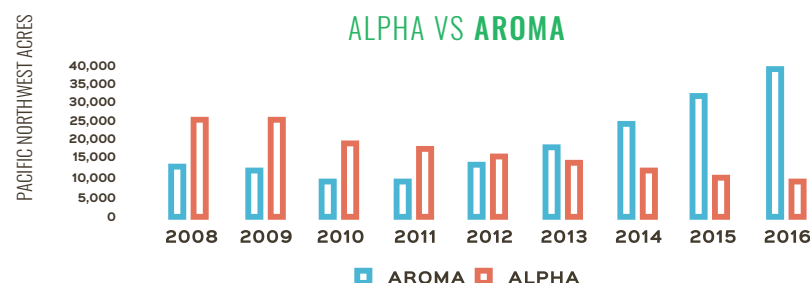


Figure 4. Bar graph represents shifts in PNW acreage dedicated to aroma vs. alpha hop varieties. PNW switched to dedicating more acres to aroma in 2013.

95% OF YCH VOLUME IS COMPRISED OF 16 VARIETIES:

AMARILLO®
CASCADE
CENTENNIAL
CHINOOK

***CITRA®**
CRYSTAL
CTZ
***EKUANOT™**

GALENA
***HBC 682**
***LORAL™**
***MOSAIC™**

NUGGET
***PALISADE®**
***SIMCOE®**
WILLAMETTE

THE OTHER 5%

***AHTANUM™**
BITTER GOLD
BRAVO
BREWER'S GOLD
BULLION
CASHMERE

CHELAN
CLUSTER
COMET
FUGGLE
GLACIER
GOLDING

***HBC 342**
***HBC 438**
***HBC 472**
***HBC 520**
***HBC 522**
HORIZON

LIBERTY
MAGNUM
MILLENNIUM
MT. HOOD
MT. RAINIER
NEWPORT

PERLE
SAAZ
SANTIAM
SORACHI ACE
STERLING
SUMMIT™

TAHOMA
TETTNANG
ULTRA
VANGUARD
***WARRIOR®**
YAKIMA GOLD

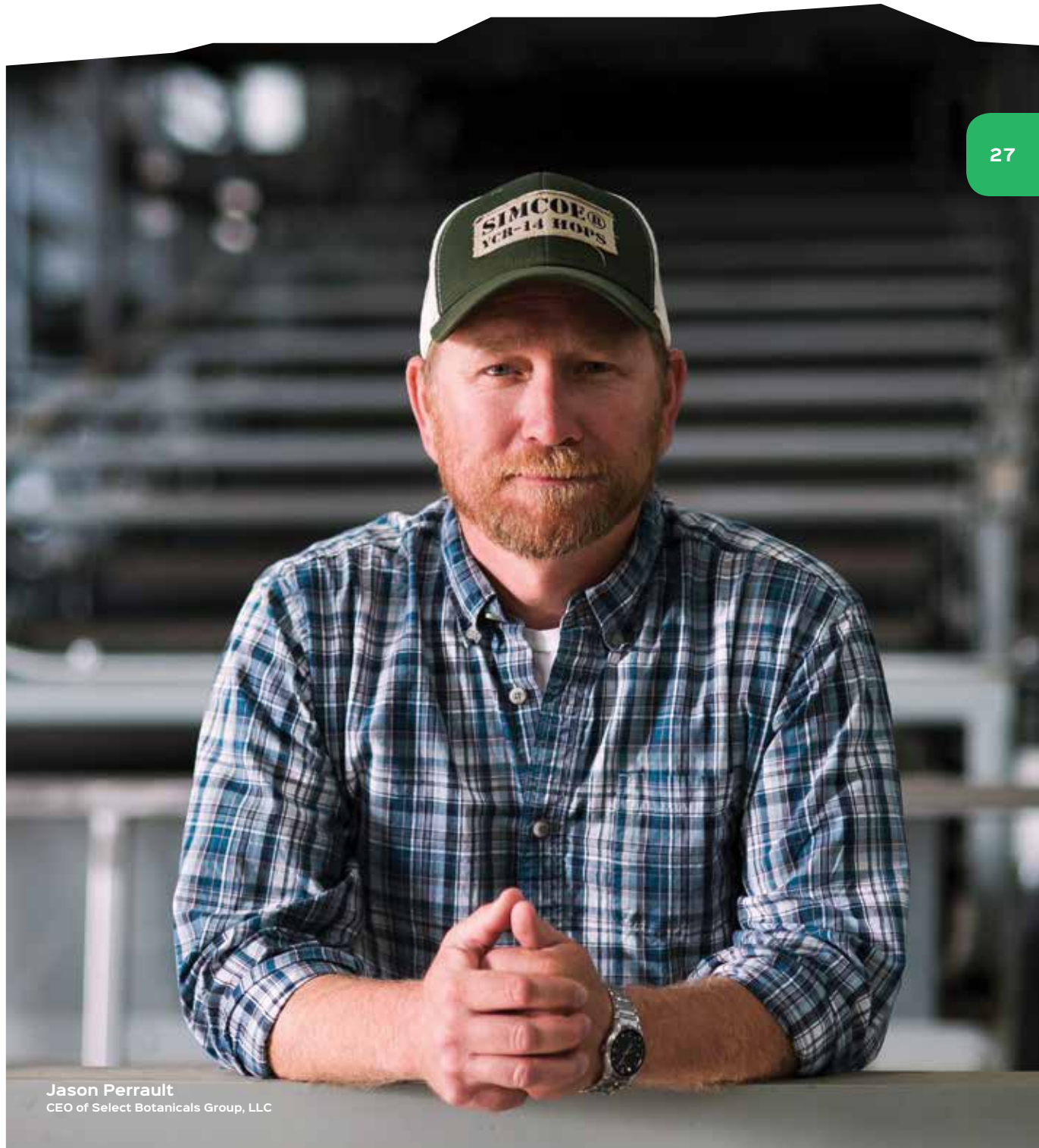
YCH sources a diverse selection of hops from the Pacific Northwest, with 16 varieties accounting for 95% of total 2016 harvest volume. * Select Botanicals Group, LLC (Brand YCR) and/or Hop Breeding Company LLC (Brand HBC) varieties.

SELECT BOTANICALS G·R·U·P

For more than 25 years, Select Botanicals Group has been committed to developing premium hop varieties. They evaluate thousands of genotypes each year, focusing on varieties that have the potential to improve both growing efficiency and overall industry quality through decreased inputs. This approach allows SBG to provide a fair price to YCH and our resulting brewing customers, while simultaneously ensuring a fair return to growers.

Like YCH, SBG is a 100% grower-owned company. They view the value chain as an interconnected community and promote a quality management philosophy deeply ingrained in the idea that “the best fertilizer is the farmer’s footprints in the field.”

As such, SBG employs a comprehensive, quality-assurance program known as Footprints™, which encompasses a variety of focus areas.



Jason Perrault
CEO of Select Botanicals Group, LLC

SBG FOOTPRINTS™ FOCUS AREAS

SITE PREP - SBG works with growers to maintain clean, pure ground for hop varieties to be planted to ensure varietal purity.

- ▣ Sites for planting should not have grown hops in the previous year. If there were hops, the ground must be fumigated or SBG varieties must be planted between pole rows.
- ▣ Upon approval of clean ground by SBG, the grower's hop yard will be recorded, signed into production and GPS mapped.

VARIETAL PURITY - SBG employs a highly technological rogueing program to remove males and non-true-to-type plants from the hop fields, reducing seed content and increasing varietal purity. Rootstock is propagated from clean hop fields to ensure growers receive rhizomes that are true to type for new acreage or expansions.

- ▣ Yards will be scouted throughout the year for off-types.

CROP MANAGEMENT - SBG works with each grower to ensure best management practices are applied to each variety. This includes:

- ▣ Optimal training dates
- ▣ Integrated pest management
- ▣ Soil fertility management
- ▣ Optimized harvest windows

HARVEST QUALITY - Harvest can make or break hop quality so SBG requires specific standards on how varieties are harvested to create a consistent, high-quality product.

- ▣ Aroma hops are dried at lower temperatures (as dictated by individual varietal standards) to preserve oil content.
- ▣ Hops must be clean, free of debris, and a consistent green color true to type.
- ▣ Kiln depth may not exceed 30" to maintain a uniform dry.
- ▣ Moisture rating must be between 8.5% and 10.5%.

FOOD SAFETY - SBG is committed to providing brewers with the cleanest, highest-quality hops possible. To maintain this commitment, SBG endorses and requires adherence to the GreenChief® farm quality program developed and administered by Yakima Chief - Hopunion.

- ▣ A pre-harvest checklist is designed to help each grower prepare for issues with food safety at harvest.
- ▣ An early harvest checklist to ensure food safety issues existing prior to harvest have been addressed.
- ▣ Ongoing food safety training is required for SBG employees.

TRACEABILITY - It is important for growers, suppliers and brewers alike to know where hops are coming from, and where they are going. As a result, developing key measures for traceability is critical.

- ▣ Uniform requirements for pest management records, delivery, and other data reporting
- ▣ A central tracking database
- ▣ Requirements for hop yard registration and tracking
- ▣ Collaboration with handlers to avoid any level of confusion





SBG INTERNS

Each year, Select Botanicals Group recruits men and women from across the United States to move out to Yakima, Washington for the summer and form the backbone of Footprints; SBG's quality and sustainability program. The days are long, hot, and tiring, walking about 15 miles a day through every row of every field to scout for male plants, mildews, and pests. Their contributions are integral to creating a new standard of quality in the hop and beer industries, and securing YCH HOPS' position as the brewers' preferred provider of the world's finest hops. SBG's interns also work closely with growers to aid them in sustainable environmental stewardship, particularly responsible water usage and spray regimens.

While the majority of their time is spent on quality assurance in the fields, the interns are exposed to a myriad of educational modules and enrichment

opportunities which provide them with a holistic understanding of the hop industry. Seminars on hop breeding, supply chain management, hop chemistry, pilot batch brewing, sensory analysis, processing, and marketing are some of the components of their hop education. By furnishing the interns with these lessons, they not only become better employees, but also more attractive to prospective employers in the farming and brewing industries.

SBG actively works to facilitate each intern's entrance into the career path that best fits their interests and skills, helping to bolster the farming and brewing communities with young, bright minds. Since the inception of the Footprints program in 2012, SBG interns have secured positions at YCH HOPS, B.T. Loftus Ranches, Perrault Farms, Roy Farms, Oasis Farms, Anthem

Cider, Fat Head's Brewing, Lagunitas Brewing Company, Pfriem Family Brewers, Maui Brewing Company, E.J. Gallo Winery, John I. Haas and Select Botanicals Group.

While driving thousands of miles between 42 farms and taking countless steps through hop fields, the interns form lasting relationships and positively contribute to the local community. Through the Footprints internship program, SBG improves the sustainability of the hop industry by reinforcing quality, promoting environmental stewardship and fostering education and experience at the intern level. Interns of Footprints have proven to be an indispensable component of this dynamic industry, and YCH is proud to work with SBG as they help to cultivate the next generation of hop growers and brewers.

OUR PRODUCTS

We believe in celebrating the agricultural roots behind every batch of beer and in telling the story of hops from farm to pint. For us, this is the joy of being grower-owned and the reason why we are so passionate about hops. We take pride in our growers' dedication to delivering quality hops and are committed to maintaining that same quality throughout our processing operations.

Each of our product lines are processed in a distinct way and are designed to deliver value-added solutions to each of our brewing customers.



GREEN HOPS®

Green Hops® are the most unpredictable yet exciting form of hops available. They are harvested fresh as whole, wet cones at the farm and are shipped to customers for immediate brewing within 36 hours of harvest. Unlike any other product, Green Hops® are completely unprocessed. Their unadulterated state is only experienced once per year, endowing each harvest with an enticing flavor profile through use in fresh hop beers.



WHOLE-LEAF

Whole-leaf Hops are the dried and pressed inflorescences of female hop plants. The cones are removed from the plants, kiln-dried and pressed into bales at the farm where they were grown. From there, bales are delivered to one of YCH HOPS' campuses and stored until order fulfillment. Leaf hops embody the characteristics of the variety, as well as the unique aspects of their field, growing season and farm management systems.



CRYO HOPS™

Cryo Hops™ is the newest product line in YCH HOPS' portfolio. Using a proprietary cryogenic separation process, two Cryo Hops™ co-products are produced when whole hop cones are split into purified lupulin and bract fraction. LupuLN2™ is the purified lupulin powder containing the majority of the resin compounds and aromatic oils directly from whole-leaf hops. PureLeaf™ is the bract fraction of the hop which has had most of the lupulin removed. LupuLN2™ packs a concentrated punch of pure resin compounds and aromatic oils while PureLeaf™ offers a high-quality, low-alpha alternative to provide noble character in beer.



PELLETS

Hop Pellets are produced at YCH HOPS from dried, whole-leaf hops which have been hammer-milled into a uniform powder and pressed through a pellet die. YCH's pellet process has been designed with dry hopping in mind. Pellets are made in a liquid nitrogen cooled pellet press with specially designed dies to produce low density pellets that never get hot. As a result, hop pellets retain all of their natural lupulin and cone material and can be utilized as a full replacement for whole hops.



RESINATE®

Resinate® CO2 hop extract derived products are produced from soft hop pellets by supercritical CO2 extraction. CO2 hop extract is the pure resin extract of hops containing alpha acids, beta acids and hop oils. Through further separation, additional Resinate® products are produced, offering efficiencies that include clean bitterness and hop aroma, enhanced foam stability, and/or post-fermentation bittering capabilities.





OUR PEOPLE

As a company committed to continuous improvement, YCH is not only dedicated to advancing our products and processes, but our company culture as well. We strive to honor the traditions of our past while focusing on building an engaging and highly satisfying environment for the future.

We survey employees on an annual basis using a standardized and anonymous employee engagement survey provided by the Society for Human Resources Management (SHRM). The results of this survey are analyzed to measure overall employee satisfaction and utilized to create initiatives that promote collaboration, respect and equality across all levels of the organization.

During this reporting period, YCH hired 59 employees. Some additions were to fulfill existing roles while others were newly created positions to support the expansion of our company's operations.

HERE'S HOW WE'RE DOING



EMPLOYEE PARTICIPATION RATE

97%

↑ 33% FROM 2015 TO 2016



OVERALL EMPLOYEE SATISFACTION SCORE

4.34/5

↓ 0.19 FROM 2015 TO 2016

The 2015 employee survey resulted in an original overall score of 3.8 out of 5. The method by which we analyze and assign the overall satisfaction score was changed in 2016 to target satisfaction-specific categories and to provide greater insights to target improvement. Using the new method, the overall score from 2015 was 4.53 and in 2016 is 4.34, indicating a drop of 0.19. To respond to this change in analysis and overall score, the employee satisfaction goal for the 2016 Sustainability Report was revised.

PEOPLE OVERARCHING GOALS



GOAL ONE

IMPROVE OVERALL EMPLOYEE SATISFACTION

YCH aims to increase overall satisfaction results to 4.5 out of 5 on the Employee Satisfaction Survey by July 2017.



GOAL TWO

ESTABLISH PROCESSES TO INCREASE ORGANIZATIONAL SUPPORT

YCH aims to establish processes that would increase financial or in-kind support of organizations in our communities that support environmental restoration, education, or health, especially for those that serve farm workers.



GOAL THREE

ENHANCE STAKEHOLDER ENGAGEMENT

YCH aims to enhance stakeholder engagement by striving for representation and inclusion of diversity through all levels of the company.

PEOPLE STRATEGIC GOALS



GOAL ONE

- **MAINTAIN** above 90% participation rate for employee satisfaction survey
- **INCREASE** participation in tuition reimbursement program by 50%
- **BREWING 101** Employee Education Program



GOAL TWO

- **DONATE** to an organization that benefits under-served communities
- **DONATE** to an organization that has been voted on by YCH employees
- **PROVIDE** internal company support to encourage employees to donate their time and contribute to charities



GOAL THREE

- **REEVALUATE** organizational working groups to ensure better representation of YCH's employee demographics and highly influential personnel

KEY LEARNINGS

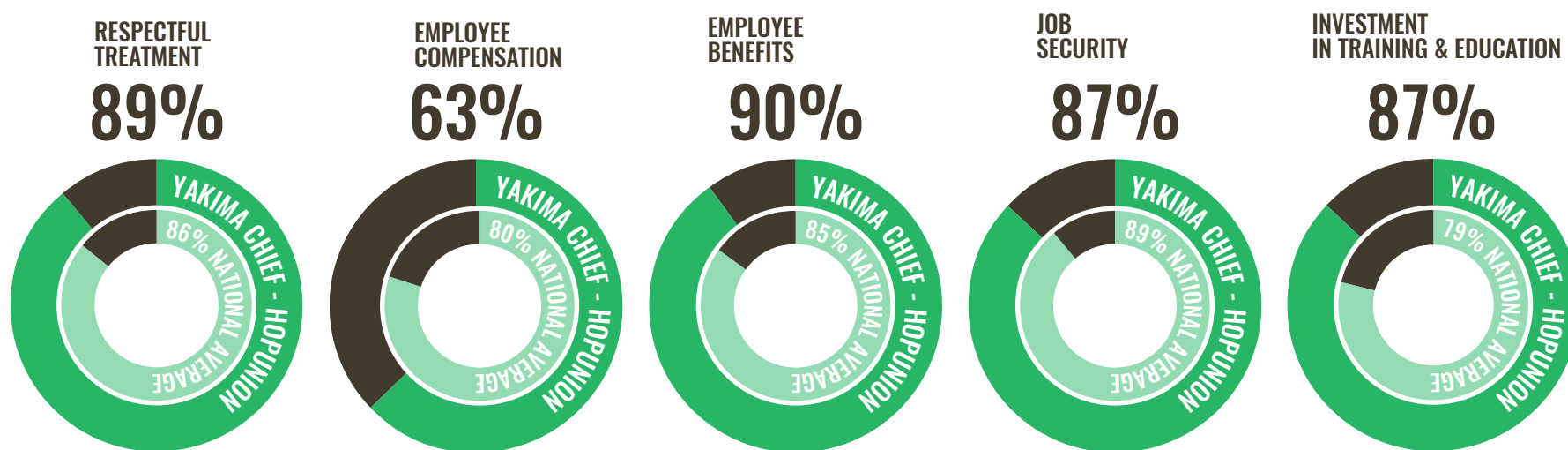


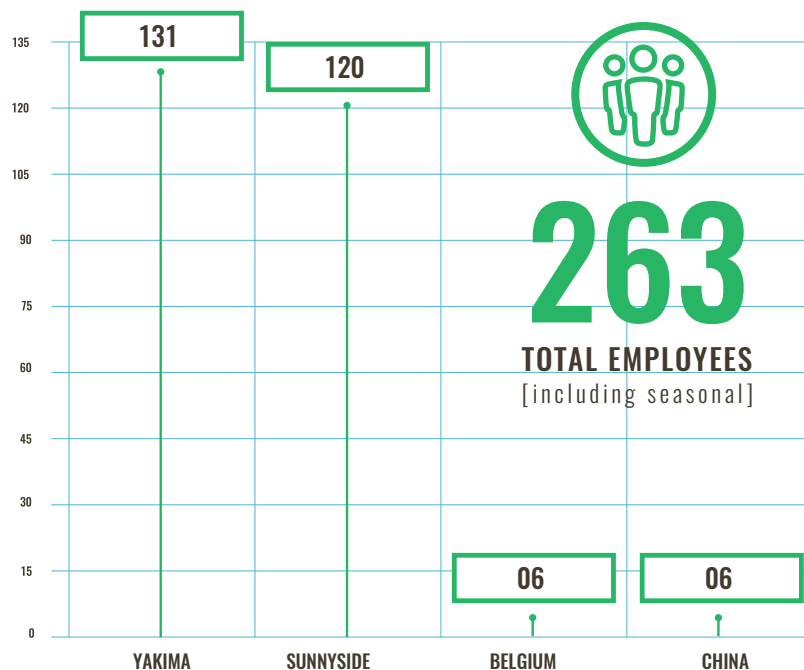
Figure 5. Comparison of YCH's employee satisfaction survey responses to national averages from over 600 organizations. Graphs highlight the top 5 contributing factors to employee satisfaction. (Employee Job Satisfaction and Engagement, SHRM, 2016).

KEY ACCOMPLISHMENTS

- | | | | | | |
|-------------------------|---|-----------------------|---|-----------------------|--|
| <p>DEVELOPED</p> | <p>INDIVIDUAL DEVELOPMENT PLAN ✓</p> <p>YCH has developed a system to provide employees the opportunity to work with their managers to set goals, request resources, and create a road map to better align their passions, skills, and responsibilities.</p> | <p>ONGOING</p> | <p>NEW EMPLOYEE ORIENTATION ✓</p> <p>A monthly on-boarding program has been developed to help connect new employees to YCH operations and personnel. All new hires participate in the day-long orientation, learning about cross departmental responsibilities from managers and team members.</p> | <p>ONGOING</p> | <p>TITLE CHANGES ✓</p> <p>As a result of organizational restructuring and performance reviews, many YCH employees received new job titles to better reflect their position, skills, and contributions to the company.</p> |
| <p>DEVELOPED</p> | <p>COMPANY CULTURE COMMITTEE ✓</p> <p>Comprised of representatives from various departments, this committee prioritizes and promotes internal initiatives designed to enhance company culture and offer educational opportunities to employees.</p> | <p>ONGOING</p> | <p>SALARY ADJUSTMENT ✓</p> <p>YCH reevaluated wages across departments to ensure competitive compensation with the local market. Adjustments became effective August 1, 2016.</p> | | |

EMPLOYEE DEMOGRAPHICS

We are committed to ensuring all employees have equal opportunities and representation in all aspects of our company. Our full-time staff is comprised of 47% Latino employees, directly reflecting the 48% of Yakima County that identifies as Hispanic or Latino, according to the U.S. Census Bureau. When we examine our current organizational structure, a pattern emerges in that overall diversity decreases as positions within the company hierarchy increase. We are mindful of this fact and are working towards a more inclusive and diverse organizational structure.

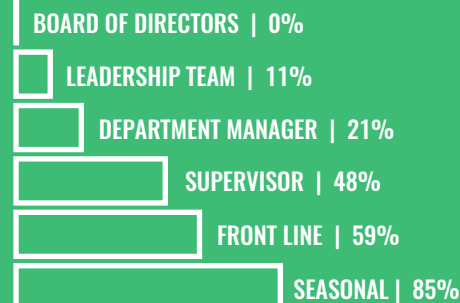


YCH IS GROWING

↑ 59 EMPLOYEES FROM 2015 TO 2016

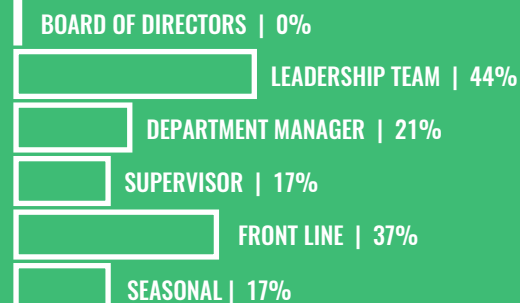
MINORITY REPRESENTATION

3% DECREASE
FULL-TIME EMPLOYEES



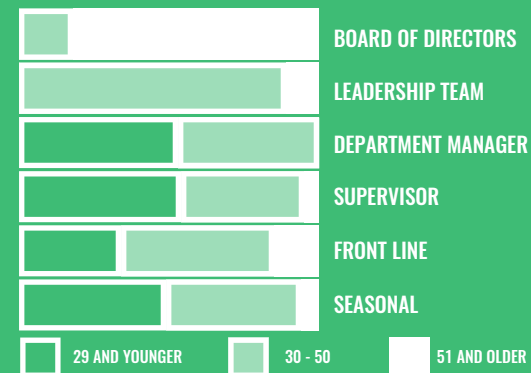
FEMALE REPRESENTATION

27% INCREASE
FULL-TIME EMPLOYEES



AGE DISTRIBUTION

19% INCREASE
FULL-TIME EMPLOYEES UNDER 30



Employee demographics with comparison to 2015.

SALARY RATIO | WOMEN:MEN



When comparing salaries of women to men across all layers of our organization, the largest disparity exists between members of our Leadership Team. This is due in part to the limited number of employees in this category (9) as well as under-representation of female employees in the highest paid positions of our company.

EMPLOYEE COMPENSATION

We evaluate wages in an effort to support sustainable compensation and equity among all demographics. The result of the staff survey revealed that 37% of employees do not feel as though they are compensated fairly compared to the local market. YCH is unable to confirm that our compensation is competitive due to privately-held ownership among hop suppliers. However, significant effort is being invested into gathering and analyzing wage data from comparable industries and positions to continuously evaluate and improve wages.

STARTING WAGES



FULL-TIME YCH
EMPLOYEE STARTING WAGE
\$12.00/HR



WASHINGTON STATE
MINIMUM WAGE
\$9.47/HR

While YCH's starting wage for full-time employees is not uncommon for agricultural-based industries, there is opportunity for improvement in order to meet the regional cost of living and potential responsibilities of supporting a family.

YCH BENEFITS

Based on our Employee Engagement Survey, 91% of employees reported being satisfied with their benefits package. YCH is proud to provide extensive benefits including healthcare, life insurance, short and long term disability, retirement planning, paid holidays, and personal and vacation pay.

- ✓ 401 K - 4% COMPANY MATCH
- ✓ HEALTH, DENTAL & VISION INSURANCE - EMPLOYEE ONLY COVERAGE PAID AT 90% BY YCH
- ✓ EMPLOYEE DEPENDENT COVERAGE PAID AT 50% BY YCH
- ✓ 10 RECOGNIZED HOLIDAYS
- ✓ 1 WEEK PAID PERSONAL TIME
- ✓ 3 WEEKS PAID VACATION

JOHN ARNEY
IT PROJECT MANAGER

PROFESSIONAL DEVELOPMENT

Over the past couple years, I have been looking into furthering my education and comparing the pros and cons of different degrees and technical certifications. When I was informed that Yakima Chief - Hopunion was considering a scholarship reimbursement program, I decided that it was time to make my decision. Coincidentally my alma mater, Central Washington University, recently began offering courses that help students earn a Master's degree in Information Technology and Administrative Management, the same title and field as my Bachelor's degree. With the love and support of my family, friends and fiancé, I decided to apply for the program and happened to be one of the first applicants to be accepted.

After I received my acceptance letter from CWU, I started to work closely with my manager to ensure the timing was appropriate and that the workload of the classes wouldn't negatively affect my job at YCH. He recommended that I speak with the executive management team and apply for the tuition reimbursement program. The application itself required basic information on what classes I would be taking and how I anticipated they would better my career at YCH. Aside from the major financial, emotional and time investments, it is not difficult to identify the value, as the

classes I will be taking are directly related to upcoming projects at YCH, allowing my professional and collegiate experiences to mutually benefit each other.

One of my main goals in life is to earn a PhD in Information Technology with a specialization in Project Management or Information Management. This Master's degree is a stepping stone towards that goal. I think that technological advancement and adoption are driven by the companies and employees that pursue it. Learning how to best use new technologies and incorporate them into our business will streamline our efficiency in connecting family farms with the world's finest brewers.

As a member of the IT team for YCH, our goal is to create building blocks that support success among all teams in their processes. The growing variety of advanced technology that we have at our fingertips combined with a better understanding of how to use it can help continue to mold Yakima Chief - Hopunion as a world's leader in the hop industry. This organization starts and ends with people and the quality of their lives, and the tuition reimbursement that I am receiving is drastically going to improve mine.

INCREASING COMMUNICATION, DECREASING BARRIERS

We are passionate about our employees' personal and professional development, and continually seek ways to help our staff discover and accomplish their goals. Through candid discussions and evaluation of our employees' Individual Development Plans, the need and desire for linguistic educational opportunities became apparent this past year.

With a diverse workforce on the front-lines, many of our employees expressed interest in participating in language classes to enhance communication and decrease language barriers among their teams. After receiving feedback on the best way to facilitate this interest, the Human Resources department organized evening English as a Second Language (ESL) classes, held free of charge for interested parties at YCH's Sunnyside campus. In addition, an online course is being offered to employees desiring to learn Spanish.

Upon completing the language courses, participants were asked to share their thoughts. Their responses highlight the positive affects this opportunity had on their lives both inside and outside of work, and demonstrate the value of investing in employees. Our Human Resources department is researching additional education opportunities and plans to offer more on-campus classes in the future.



JUAN CARLOS MARAVILLA
Cryo Supervisor

"I feel proud and full of motivation of this life opportunity, especially since the classes were free with the cooperation of YCH. I hope to gain broader connection with my work and life outside of work."



PRISCILIANO MANZO
Forklift Operator

"It makes me feel very good that YCH offered me this opportunity. I would like to accomplish more by continuing to take more classes."



TONY GUTIERREZ
Pellet Plant Supervisor

"It's an honor to be working here. The classes have had an immediate benefit for me professionally, I'm now a Shift Supervisor in the Pellet Plant. My goal is not to stop here. This is just the beginning, I would like to accomplish more and learn more."



JAVIER SERRANO
Asst. Supervisor / Packaging

"It helps me grow as a person and motivates me to keep giving the best of me. I would like to continue taking classes and be a better communicator. I have included this as part of my goals in my IDP."



MAURILIO MADRIGAL
Warehouse Supervisor

"The classes have helped me communicate better with my kids. I'm able to help them with their homework by reading their assignments. Professionally, I feel I'm able to communicate better with my co-workers, managers and our brewer customers that come to the plant and ask me questions."



JAVIER HERNANDEZ
Forklift Operator

"The English classes have helped me read school letters that come home with my children. I'm able to help my kids with their homework. Professionally, I'm able to read our employee newsletters, emails, and I'm working on being a better communicator. My goal is to continue to take ESL classes to improve my English. By doing so, I feel it will open more opportunities for me at YCH."



SHANE HATLEY
Pellet Plant Supervisor

"I am interested in learning Spanish to expand my ability to communicate with all employees. If I better understand and communicate with my team, I can be more compassionate towards their needs and help them grow within the company. Speaking the same language also means that job requirements can be communicated without loss of translation and help everyone be able to achieve their goals and do the job better."



HILARIO CANO
Forklift Operator

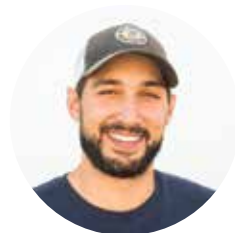
"By continuing ESL classes I hope to have more career opportunities presented to me so I can advance and grow in my career at YCH. I'm looking forward to next year to get involved in the program again."

Employee of the Year 2015/2016
DAVE GONZALES
 Director of Information Technology

EMPLOYEE RECOGNITION

From annual awards to employee of the month nominations and spontaneous excellence cards, YCH seeks to recognize employees in both big ways and small for their outstanding contributions to the company.

EMPLOYEES OF THE MONTH 2015/2016



KEVIN SOULES
Marketing Associate - Creative



MAURILIO MADRIGAL
Warehouse Supervisor



JOE NIEMANN
Quality Systems &
Food Safety Manager



CHAD ROBERTS
Quality Coordinator



JON COOK
Application Analyst



VICTORIA GARZA
Strategic Accounts Manager



TYSON CRUDUP
Cryo / Evac Manager



MARIA YANEZ-MEJIA
Accounting Support Specialist



BLAZE RUUD
Regional Sales Manager
Pacific Northwest



BALDEMAR GARCIA
Pellet Plant Supervisor
Sunnyside



NICOLE WETZEL
Inside Sales Coordinator



ALEX NEWLAND
Laboratory Technician



SQUARE WATERMELON AWARD

AWARD WINNERS 2015



PABLO NAVA



BRIAN TATE

Inspired by Japanese farmers who developed and grew square watermelons in pursuit of customer satisfaction and efficiency, the Square Watermelon Award is one of YCH's highest employee honors. Presented on an annual basis, winners of the Square Watermelon Award are recognized for submitting innovative and implementable ideas that support YCH's company mission, vision, and values. Previous award-winning ideas have included the development of a recycling program, improvement of separation efficiency, and increased dust control.

This year, Brian Tate, Mechanic, and Pablo Nava, Extract Plant Supervisor, took the initiative to create and install an innovative platform gate within the Sunnyside extraction facility. This custom-designed, swinging gate sits upon a high-elevated platform used for receiving boxes of pellets for the extract plant "hopper" and allows employees to move freely atop the platform without having to hook and unhook a chain. Prior to the gate, a chain was all that lined the opening of the platform.

This new addition greatly increased the safety of employees and consequently efficiency as well. Along with lower safety risks, there is ease of use as forklift drivers are able to drive pallets directly onto the platform without interruption. The previous chain required double work and made a large difference in efficiency during the operating season. By avoiding an electrical design, there is also a lower chance of it breaking down.

YCH is proud of the work individual staff members contribute and recognizes that we would not be able to continue improving without the creativity, attentiveness and commitment of our valued employees. We thank Pablo and Brian for working diligently on the platform gate project, exemplifying true dedication to YCH, and congratulate them for winning the 2015 Square Watermelon Award.



EMPLOYEE INCENTIVES

YCH Bucks is an employee incentive program designed to promote healthy lifestyles, enhance innovation, encourage improvement, and reward employee camaraderie. YCH Bucks are earned through participation in programs that focus on health, safety, quality and productivity, and can be used as credit towards YCH HOPS merchandise, gift cards, or entry into raffles/auctions at annual YCH events.

SAFE PRACTICES

We are committed to developing a safe and open workplace that breeds trust and loyalty. Our open door policy extends to all personnel regarding concerns related to labor practices, safety or the environment. This policy is in the Employee Handbook and ISO certified quality and environmental management systems. Formal safety committees meet on a monthly basis at both our Yakima and Sunnyside facilities to discuss any open concerns. We are mindful of having more hourly employees represented than management to validate the meeting and comply with Washington State Department of Labor regulations.

EVERY SAFETY MEETING IS ATTENDED BY AT LEAST ONE EMPLOYEE PER DEPARTMENT, AND MAINTAINS COMPLIANCE WITH STATE LABOR LAWS.

YCH BUCKS PROGRAM



SMOKING CESSATION PROGRAM



RUN / WALKS FOR CHARITABLE CAUSES



JOINING A GYM



SUBMIT IDEAS THAT REDUCE WASTE OR INCREASE QUALITY



SUBMIT PROCESS IMPROVEMENT REQUEST TO ADD CUSTOMER VALUE



RECEIVE AN EMPLOYEE EXCELLENCE AWARD



MEET LOSS TIME RATE GOAL

COMMUNITY INVOLVEMENT

As outlined in our vision, YCH is committed to being a responsible neighbor to the communities where we operate, live, and serve. We are proud to contribute to a number of admirable organizations through events and sponsorships, and continuously seek to develop a culture that positively engages our stakeholders. We are in the process of evaluating our formal policy for community donations to ensure all recipients of funds share our company values and goals.

ALES FOR ALS - We are proud to partner with Loftus Ranches in support of Ales for ALS. Each year, Loftus Ranches works with notable brewers from throughout the US to create an exclusive, experimental hop blend for the Ales for ALS program. We then donate the time, labor, facilities, production costs and shipping logistics required to deliver this special blend to breweries in exchange for participation in a donation program designed to raise awareness and funding for ALS research. Through the donation of at least \$1 from every specialty Ales for ALS pint sold, craft breweries have helped raise more than \$1.2MM through 2015 for the ALS Therapy Development Institute, the world's leading organization focused on the research and development of new treatments for the disease. Since 2013, support of Ales for ALS has grown from 40 breweries in 15 states to more than 120 breweries in 31 states in 2016.

alesforals.com

FRESH HOP ALE FESTIVAL - There is no better way to celebrate the hops of Yakima Valley and their contribution to the beer industry than to enjoy a pint created to showcase the extraordinary qualities of freshly picked hops. Fresh Hop Ale Festival is an annual event highlighting the best of our community and industry through brewer participation, camaraderie and the competitive spirit that goes into brewing this challenging style. The event is organized by Fresh Hop Group, a 100% volunteer-run non-profit, and benefits arts in the Yakima Valley. YCH is proud to be the title sponsor and have many employees who donate their time as event volunteers and active members of the Fresh Hop Group. In 2015, the event raised \$135,000 for community programs. freshhopalefestival.com

GLEN HAY FALCONER FOUNDATION - Through the sale of Falconer's Flight® and Falconer's Flight 7Cs®, we are pleased to support the Glen Hay Falconer Foundation. The mission of the foundation is to contribute to Pacific Northwest craft brewing communities by providing opportunities for professional and aspiring brewers to further their knowledge and expertise through the distribution of brewing scholarships. Since 2010, YCH (previously Hopunion) has been able to contribute more than \$250,000, including \$50,000 in 2015/2016. Since 2004, the foundation has awarded more than thirty full-tuition brewing education scholarships. glenfalconerfoundation.org

SUNNYSIDE SUMMER ALE FEST - To honor the Sunnyside area's hop production, an event was organized that celebrates the wonderful beer that the community helps produce while fundraising for a great cause. Now in its 2nd year, Sunnyside Summer Ale Fest is an annual event that features a wide variety of craft beer from some of our region's best breweries, wine, food and live music. The event is organized by the Summer Ale Fest group, hosted by Daybreak Rotary of Sunnyside and 100% volunteer-run. All proceeds are used to support youth sports and activities in Sunnyside. YCH HOPS has been the title sponsor for the last two years, helping the non-profit group to raise over \$30,000 in total. With the financial support, the organization has touched the lives of students in the Sunnyside School District, primarily Hispanic students, by funding a cultural and natural history learning enhancement project. summeralefest.org

CASH DONATIONS & SPONSORSHIPS

14U Fastpitch Softball Team
Beer4Boobs
Coviche Canyon Conservancy
Moxee Hop Festival

Rock the Gap – Yakima Kiwanis
Second Harvest
Tony Gwynn Museum
Yakima Youth Soccer Assoc.

Pink Boots Society Scholarship
Pints for Prostates
Beer Autism Hope

MEMBERSHIPS

Organizations that YCH is a member of or is an active participant:

Hop Research Council
WA Department of Agriculture Hop Liaison Committee
Washington Hop Commission
Hop Growers of America
Sustainable Agriculture Initiative (SAI) Platform

Brewers Association
American Homebrewers Association
The American Society of Brewing Chemists
Master Brewers Association of the Americas



Fresh Hop Ale Festival





OUR PLANET

YCH is dependent on the ability of farms to grow and harvest hops in an unforgiving environment. Above all else, we know the productivity of our growers' land will be the deciding factor in our industry's success. With this in mind, we have developed strategies and goals that go beyond regulatory compliance and aim to actively reduce the environmental impacts of our supply chain while promoting environmental restoration and conservation of our planet's natural resources.

We employ a variety of collaborative approaches to address environmental impacts and opportunities in our operations and on the farm. In the coming year, we intend to be involved in a working group facilitated by Hop Growers of America that is comprised of industry colleagues, environmental professionals, and growers to discuss ecological issues relating to hops.

In order to target areas for improvement, we must first understand the environmental impacts associated with our inputs and outputs.

PLANET OVERARCHING

GOALS



GOAL ONE

ESTABLISH A FARM SUSTAINABILITY BASELINE

Establish a baseline for grower owner farms regarding environmental and social practices using the Sustainable Agricultural Initiative's (SAI) Farm Sustainability Assessment by July 2017



GOAL TWO

MAINTAIN ISO 14001 CERTIFICATION & MOVE TOWARDS 14001:2015

By July 2017



GOAL THREE

BECOME A ZERO-LANDFILL COMPANY

By July 2017



GOAL FOUR

GENERATE 5% OF POWER CONSUMPTION FROM ON-SITE SOLAR

By December 2016



GOAL FIVE

REDUCE YCH CO2 EMISSIONS BY 50%

By July 2020



GOAL TWO

- **CONTINUE** to work towards achieving new ISO 14001 certification for new 2015 standard by 2018
- **INSTALL** Energy Management System to track overall company utility usage
- **DECREASE** pounds of nitrogen per pounds of pellets by 10% compared to 2016 baseline by 2018
- **PHASEOUT** R-22 systems
- **USE** SAI FSA survey results to identify areas for improvement on farms
- **BE INVOLVED** in an environmental working group facilitated by HGA that brings together representatives from hop farms and hop companies to discuss sustainability issues
- **REDUCE** Yakima facilities water consumption by 20%



GOAL THREE

- **REDUCE** foil-to-landfill contributions by 5% and track all foil waste
- **REDUCE** foil-to-landfill associated with repack by 15%



GOAL FOUR

- **GENERATE** an additional 2% annually of 2015 electricity baseline through on-site solar panels



GOAL FIVE

- **SOURCE** renewable energy credits

PLANET STRATEGIC

GOALS



CARBON FOOTPRINT

A full life cycle analysis (LCA) was commissioned by Yakima Chief Inc. in 2012 to quantify our impact and determine the relative contributions of each process and product. Our carbon footprint is measured in overall tons of CO₂ equivalents (CO₂e), or by CO₂e per kg of hop product produced.

With both measurements, we can determine which impacts are associated with the sheer volume of our production and which are the direct result of inefficiencies. The resources required to grow, harvest and process hops in a

desert are a significant contributor to the overall carbon footprint of our products. Because YCH does not own any farms, we must approach these sustainability opportunities differently than we would our own operations.

The following sections will discuss YCH's impacts and opportunities for environmental improvement, both on the farm and within our operations.

OUR CARBON FOOTPRINT IS MEASURED IN OVERALL TONS OF CO₂ EQUIVALENTS (CO₂E), OR BY CO₂ PER KG OF HOP PRODUCT PRODUCED.

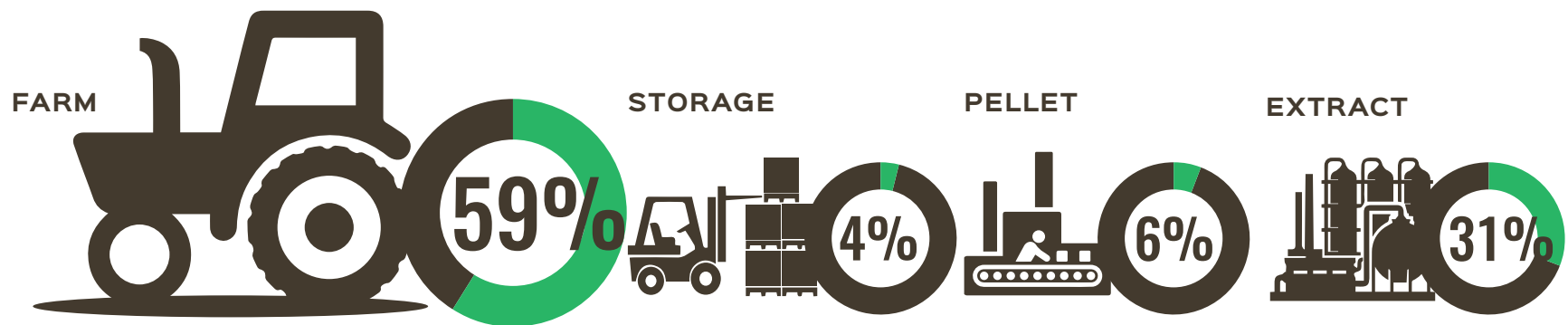


Figure 6. Total carbon footprint of hop production from cradle-to-gate (farm to extract) measured for 2011 crop year in conjunction with the Institute for Environmental Research and Education. The majority of CO₂e emissions associated with hop production is associated with farming operations (59%), with the second largest contributor being the extraction process (31%).

SUSTAINABILITY ON OUR FARMS

We utilize the Farm Sustainability Assessment (FSA 2.0) tool created by Sustainable Agriculture Initiative (SAI). The SAI Platform is a global initiative helping companies in the food and beverage industries to achieve sustainable production and sourcing of raw agricultural materials.

We use the FSA standardized survey to establish a baseline for farm sustainability that assesses economic, social, and environmental practices. Through FSA, growers are awarded Gold, Silver or Bronze rankings based on performance.

WATER

Being in Eastern Washington, Yakima does not share the same plentiful rainfall as the western portion of our state -- 8.35 inches of rain per year compared to 34 inches in Seattle. The Cascade Mountains block moisture-rich clouds from the Pacific Ocean, creating a rain-shadow effect on our valley. As a result, our farming operations and communities would not be possible without expansive irrigation infrastructure to deliver water.

ANNUAL RAINFALL | WASHINGTON STATE COMPARISON



SEATTLE, WA
34
INCHES OF
RAIN/YEAR



YAKIMA, WA
8.35
INCHES OF
RAIN/YEAR

(US Climate Data, 2016)

YCH FARM SUSTAINABILITY ASSESSMENT RESULTS



Percent ranking of four participating YCH growers in 2016 FSA 2.0 survey through the SAI platform at time of reporting.





Figure 7. Outline of major critical areas in Yakima County, WA. (Yakima County GIS)

This year, we conducted a water footprint study of our grower owner farms. The results will be used as a topic of discussion to help promote water management best practices and technological innovation in water conservation among our growers in the coming year.

Responsible water consumption will not only save on operating costs by improving plant health and yields, but will also leave water in local streams and rivers for fish, wildlife, and community recreation.

CRITICAL AREAS

Various agencies in Yakima County have designated property to enhance the local environment and provide risk-mitigation in the event of natural disasters. These areas act to conserve vulnerable habitat in the face of urban expansion, as well as to ensure clean drinking water and protect private property from floods or landslides. We are mindful of these conservation efforts as our facilities and growers' farms are interlaced with these protected spaces.

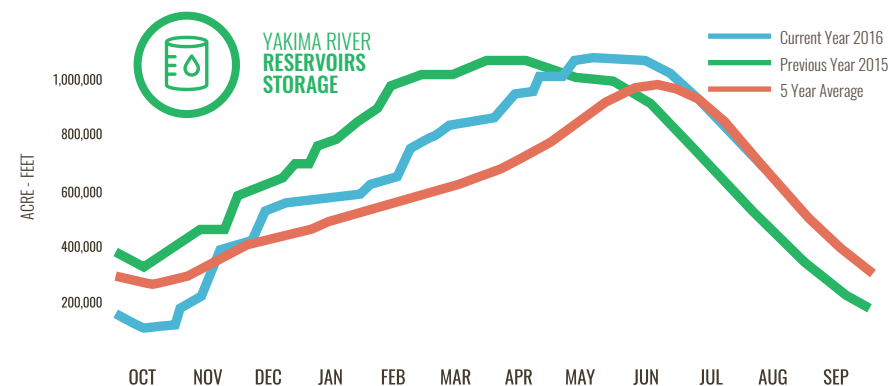


Figure 8. The five reservoirs supplying Yakima Valley have improved since the 2015 warm winter and summer drought. The water available during the 2016 growing season was on par with regional five year average. (Bureau of Reclamation, Hydromet)

WATER FOOTPRINT



TOTAL WATER TO PRODUCE
1KG WHOLE CONE HOPS

2,746 L



AVERAGE IRRIGATION REQUIRED
(ACRE INCHES/ACRE)

23

Results of the 2013 Water Footprint Survey conducted by Yakima Chief of eight hop farms. Results from the 2016 Water Footprint were still pending at the time of report publication.

ENVIRONMENTAL OPPORTUNITIES & ASPECTS

SOIL FERTILITY

While large-scale agricultural operations often use inorganic fertilizers to enhance yield, fertilizer run-off can alter surrounding terrestrial and riparian habitats, creating inhospitable environments for native species. Many hop growers offset purchased fertilizers and increase soil fertility by composting shredded plant matter that results from harvest and tilling it back into the ground. Several growers are also entering into arrangements with local composting organizations to exchange this shredded material with other industries including dairies. This exchange keeps nutrients and compost content varied enough for each party to maximize soil fertility value.

CROP PROTECTION

To defend against pests that can erode the economic value of crops, hop growers use crop protection methods which include pesticides. Because pesticides can have adverse effects on the environment and to ensure accordance with domestic and international regulations, our growers are required to maintain thorough records regarding their pesticide usage and applications. Many farms lean heavily on Integrated Pest Management (IPM) approaches to crop protection, treating the entire agricultural system while discouraging the overuse of pesticides.

ECOSYSTEM SERVICE MARKETS

Many of our growers engage in environmental programs and certifications to demonstrate their commitment to environmental conservation. Ecosystem service markets offer an additional mechanism in which organizations looking to implement environmental restoration or conservation practices are connected to organizations or individuals who would benefit from the practices and offer compensation as an incentive. We have an opportunity to facilitate conversations between our growers and beneficiaries such as environmental non-profits, developers, and water resource agencies. This will help create markets that invest in the environmental benefit of the community through sustainable agriculture.



SUSTAINABLE FARMING DEVELOPMENT

Sustainability is the cornerstone of generational farming. Every decision we make on our farm takes into account economic, societal and environmental issues and impacts.

Without taking these into consideration our decisions could be detrimental to the success and sustainability of future generations.

Decisions made by former generations have helped us get to where we are today. One of the most important decisions was becoming grower owners of YCH. YCH has given us the opportunity to be part of markets, programs, and partnerships that would not have been available otherwise.

We try and maintain the forward thinking of previous generations. One way we have done this is to become Global Gap certified. A certification from the world's leading farm assurance program shows our customers the

commitment we have towards quality and food safety—for their future and ours. Some other projects we have completed over the last ten years include:

- Installation of Perrault harvester
- Building upgrade over our picking facility
- Building upgrade over our kiln/cooling room
- Two German-style balers

These upgrades have improved our efficiencies, quality, employee safety and food safety. When needed, we will continue with upgrades to increase safety and efficiency for our employees and customers.

Sustainability is the responsibility of every generation. I hope when future generations look back at the decisions we are making, they will be motivated to keep the wheels of sustainability turning. I know this is what has motivated me!

**PATRICK GASSELING
GASSELING RANCHES**



SUSTAINABILITY AT OUR FACILITIES

To fulfill our mission of delivering the highest quality hops to our customers, our operations must utilize resources to process, store and ship product. Our goal is to make these processes as efficient as possible in order to conserve natural resources without sacrificing quality. By reducing our environmental impacts, we reduce our operating costs and create savings for our customers.

To quantify our impacts, we are developing robust mechanisms that will regularly track and analyze our Scope One and Two emissions and allow us to identify changes to our usage as well as any potential inefficiencies in a timely manner.

ENERGY USE & CARBON EMISSIONS

During the 2015-2016 fiscal year, our domestic operations consumed approximately 52,131 gigajoules of energy - the same amount required to power 1,325 U.S. homes for one year.



SCOPE ONE & TWO EMISSIONS

Scope ONE kgCO₂/kg 0.22
Scope TWO kgCO₂/kg 0.34

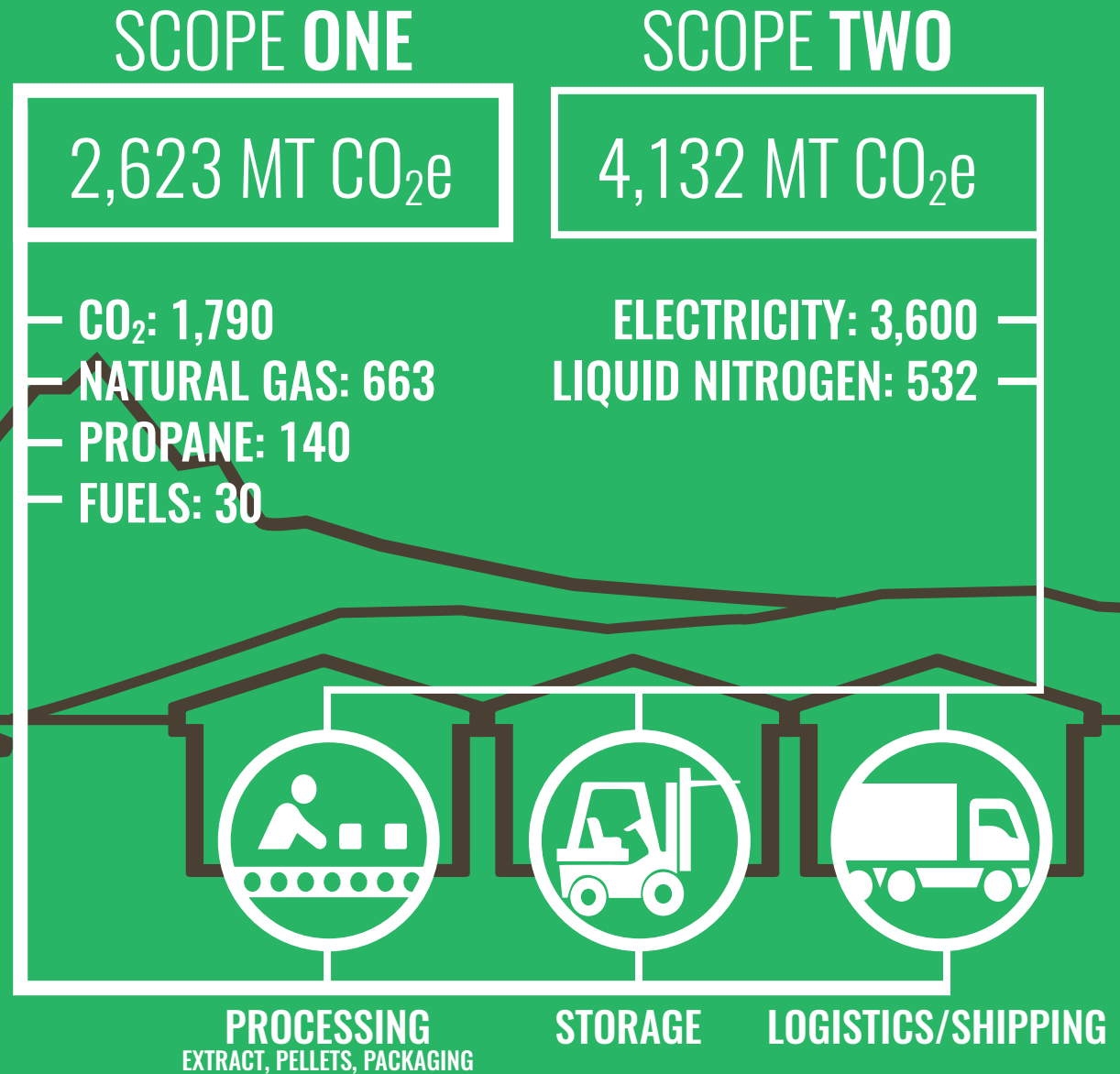


Figure 9. Measured 2015-2016 Scope One (direct emissions) and Scope Two (indirect emissions) associated with YCH operations. The process diagram highlights YCH's major operations: Processing, Storage and Logistics/Shipping. Scope Two emissions from electricity are calculated from total kWh consumption and the EPA eGRID emissions factor for NWPP region grid mix. Scope Two also includes estimated emissions associated liquid nitrogen production.

ENVIRONMENTAL OPPORTUNITIES & ASPECTS

ENERGY EFFICIENCY: Efficiency improvements can be applied to new and established facilities. In the coming year, we are actively pursuing financial incentive opportunities from one of our electricity providers, Pacific Power. The resulting projects will focus on lighting upgrades, adaptive refrigeration controls, and increased insulation in cold storage warehouses with anticipated simple payback periods of less than two years.

CO₂ EMISSIONS: In 2014, we commissioned the design of a CO₂ recapture system that would allow us to not only prevent direct CO₂ emissions from our extractor plant, but also reduce costs associated with the purchase of CO₂. The proposed system would result in the recovery of approximately 2,398 tons of CO₂ annually, based on a 3-year average of CO₂ consumption. There are multiple factors in place dictating the viability of such a large-scale project.

In the years leading up to the 2014 CO₂ recapture study, extract production volume and subsequent CO₂ consumption were significantly higher than in 2016. Additionally, the cost of purchased CO₂ has decreased considerably. These factors resulted in a newly assessed return on investment (ROI) that was less competitive than other capital expenditure projects. At this time, the CO₂ recovery project has been placed on hold until it is financially responsible to pursue. In the meantime, we will be actively pursuing ways to reduce CO₂ emissions through sourcing of renewable energy and on-site energy generation.

NITROGEN: Installation of new equipment and implementation of new processes to increase product quality has resulted in a significant increase in overall nitrogen use. We are working to institute a more comprehensive monitoring system, using specialized flow meters to measure nitrogen consumption within specific processes. *Through monitoring and adjustments, we aim to achieve a 10% reduction in our nitrogen to pellet ratio by July 2018.*





PROPANE: This Spring, we transitioned the forklift fleet at the Sunnyside finished goods warehouse from propane to electric. Energy consumption of the battery charging stations is being tracked to fully quantify environmental implications in terms of CO₂ footprint contributions. If the comparison yields decreased impacts, we will consider expansion to other fleets.

REFRIGERANTS: We utilize HCFC-22, also known as R-22, as a refrigerant. R-22 contains hydrochlorofluorocarbons (HCFC's), compounds which have been identified as Ozone-Depleting Substances by the U.S. Environmental Protection Agency. The U.S. has agreed to effectively phase out the domestic sale and production of R-22 by 2020 so all new YCH facilities are built using the replacement, R-404A. *Planning has begun to convert older facilities as we intend to work towards incrementally completing the transition of all facilities and spreading out significant retrofitting costs in coming years.*

ELECTRICITY: We have been working with a local contractor, Ellensburg Solar, to install the first set of panels in a multi-year commitment to on-site solar generation. *We intend to achieve 2% annual increases in solar contribution to our 2015 electricity consumption baseline until 2020.* By 2017, YCH hopes to have applied for grant funding from the USDA Rural Energy for America Program (REAP) to help further our solar goals.

WATER: The largest consumer of water among our facilities is the Sunnyside extraction plant where water is required in the sealing and cooling of precision pumps during the supercritical extraction process. Resulting water is diverted to an irrigation pond and used to water the grounds, provide avian habitat, and act as groundwater recharge. Aside from extraction, hop processing requires very little water. Substantial conservation opportunities exist on the Yakima campus, with irrigation accounting for nearly 70% of total water consumption. *Through more efficient and mindful water practices, YCH intends to decrease Yakima campus water consumption by 20% by 2018.*



**YCH TOTAL
WATER USE**
(IN GALLONS)

42% RECLAIMED

WATER USE - 4,592,720 EXTRACT PLANT - 1,912,732 IRRIGATION WATER - 1,020,529

MATERIALS: To protect product quality during storage and transportation from farms to YCH and YCH to customers, considerable primary and secondary packaging material is required. Many materials are readily recyclable, however, for those that aren't, we are proactively researching the potential for new materials and mechanisms to increase landfill diversion rates. Our most challenging material is primary packaging foil.

TRANSPORTATION: Frequent product transportation within YCH operations results in lost employee time, chances for product damage, and unnecessary waste of transportation fuels. Through more responsible storage management, we can reduce transfers of product and decrease order turnaround time.

We transport products to customers via air, sea and land. In an effort to streamline transportation, we have hired a Logistic Manager to analyze potential shipping efficiencies to reduce our costs and environmental impacts.

TRANSPORTATION CARBON FOOTPRINT

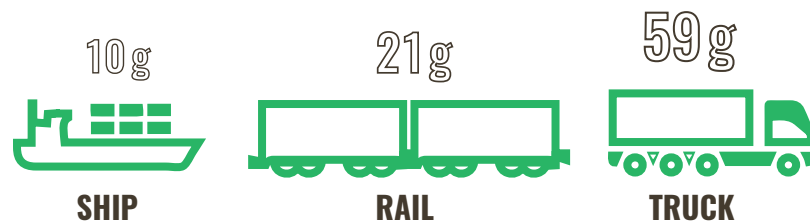
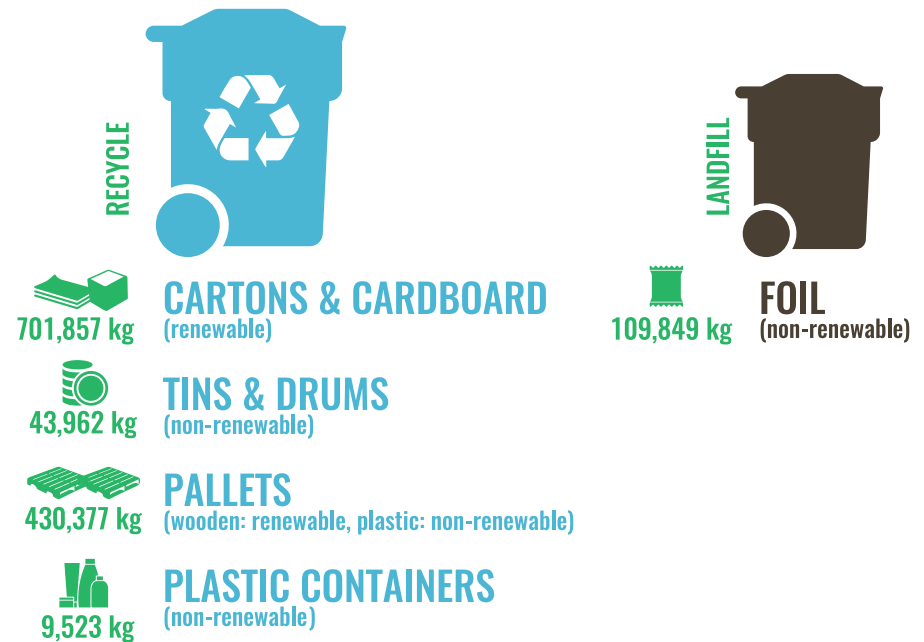
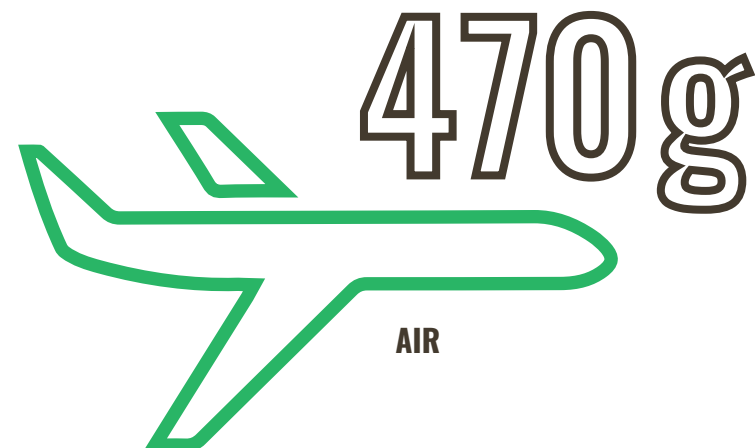


Figure 10. Illustrates the average CO₂ emissions (g) associated with carrying 1 ton of cargo 1 km via each method of transportation. (World Shipping Council).

YCH MATERIAL DISPOSAL



Major materials are defined by their composition being either that of renewable resources (ex. wood) or non-renewable (ex. steel or plastic) and categorized by their ability to be readily recycled through common U.S. waste systems. YCH's annual operational consumption of each major material is also provided in kilograms.



FOIL

We currently use a multi-material laminated flexible packaging, more commonly referred to within the industry as 'foil'. From a manufacturing and distribution perspective, flexible packaging has enabled massive leaps in efficiency and product storage quality. The trade-off comes when considering the disposal, or end-of-life stage, of these materials.

The foil we use represents an extreme challenge as it is comprised of four material layers: Polyester, Aluminum Foil, Nylon, and Linear Low Density Polyethylene (LLDPE). Recycling flexible packaging is a global challenge because there is currently no widely adopted recycling infrastructure capable of using these multi-material laminates as feedstock. Aside from the foil used in finished product, YCH operations create foil waste through three primary channels:

PRIMARY CHANNELS

1. Foil used to calibrate packaging machines during product change-over
2. Pellets stored in packaging are opened to feed into the extraction process
3. Packaged products are opened and reconfigured to accommodate customer demand.

We plan to thoroughly investigate the relative contributions of each channel, as well as the effects of limited foil waste-management options on the hops industry, brewing customers, and the environment. We intend to use the results of this research to provide a framework that identifies opportunities for improvement and raises the level of awareness surrounding the economic and environmental impacts of packaging in our industry.







OUR PROCESS

YCH has key programs that provide a strong foundation for working with brewers to provide valuable information to and from farmers, which we hope will drive change and advance the industry. We employ different programs for farming, harvest, and YCH's core business.

PROCESS OVERARCHING GOALS



GOAL ONE

REVIEW INDIVIDUAL GROWER FEEDBACK REPORTS WITH EACH FARM

By July 2017



GOAL TWO

IMPLEMENT A STRATEGIC PLAN FOR YCH FOOD SAFETY PROGRAMS

By July 2017



GOAL THREE

IMPROVE OVERALL CUSTOMER SATISFACTION WITH YCH BY 10%

By July 2017

PROCESS STRATEGIC GOALS



GOAL ONE

■ **REVIEW** individual grower feedback reports with 100% of farms supplying YCH



GOAL TWO

■ **TRAIN** 100% of operations employees in HACCP/HARPC plan by the end of Spring 2017

■ **IMPLEMENT** HACCP/HARPC systems on both campuses by Spring 2017



GOAL THREE

■ **ACHIEVE** 24 hour shipping deadline for all orders

■ **ACHIEVE** 48 hour shipping deadline for shipments requiring transfers

■ **IMPROVE** overall positive responses on customer satisfaction survey

GREENCHIEF®

GreenChief® is our farmer best practices program coordinated in partnership with Select Botanicals Group. Our goal is to facilitate continuous improvement of hop farming in areas of food safety, hop quality and sustainable growing practices. All farms providing hops to YCH and SBG, and their advisors and partners, are encouraged to participate in GreenChief® best practices meetings and activities. These gatherings are intended to promote more sustainable, high quality hop farming and collaboration between our companies, growers and brewers.

DEVELOPMENT

Over 15 years ago, the GreenChief® program was developed at Yakima Chief, one of the two companies that came together to form YCH, out of a farmer-organized best practices committee. With the merger between Yakima Chief and Hopunion, farm ownership has doubled and, in addition, we increasingly work with many non-owner or “allied” farms. We also handle a great deal of our procurement through SBG, who’s farmer owners overlap with the farmer owners of YCH. This recent expansion of complexity in our farmer base, as well as a new YCH Board of Directors led us to rethink how we organize this team. In 2017 we will be redefining how GreenChief® is governed in order to better engage and serve its membership.

GOALS OF RESTRUCTURE

1. **CREATE** a membership/ownership culture that involves and engages our three primary farm groups: YCH owners, non-owner farms, and Select Botanicals Group
2. **INGRAIN** program values in YCH’s executive leadership
3. **PROVIDE** clear responsibilities for the staff members that manage and develop the program

MEMBER ENGAGEMENT

The three membership groups will each contribute to how we govern the program, approve or develop best practice plans, solicit feedback and engage their group in implementation. By forming a GreenChief® Council made up of both owners and non-owners, we will develop the cooperative spirit of the program and strengthen relationships outside ownership.

Considering each of these groups as a “member” who has ownership over the program is a new way for us to look at GreenChief® — a logical adjustment as the program is constituted to serve the farms we work with in order to help them sustain profitable, environmentally and socially responsible farms.



Owners – annual election of a best practices chair

Non-owners – annual election of a representative who is not an owner that is nominated by growers participating in GreenChief®

Select Botanicals Group – appoints a representative

YCH & SBG LEADERSHIP

Our growers, staff and partners at SBG all share a strong passion for sustainability and for developing best practices throughout the supply chain to support our sustainability goals. Continued collaboration will be key to continued success.

GREENCHIEF® BEST PRACTICES TEAM

Using a collaborative approach, YCH and SBG contribute resources while growers supplying hops also become members. Governance and stakeholder feedback mechanisms are defined to maintain the program and measure its effectiveness.



SUSTAINABILITY

WHAT WE'RE DOING

- ✓ BENCHMARKING FARMS USING FARM SUSTAINABILITY ASSESSMENT (SAI)
- ✓ CONDUCTING FARM WATER USAGE SURVEY
- ✓ CONDUCTING FARM PRODUCTION COST SURVEY

FUTURE GOALS

- DEVELOP A FARM MANAGEMENT PLAN FOR GROWING PRACTICES THAT PRESERVE QUALITY & IMPROVE THE ENVIRONMENT



FOOD SAFETY

WHAT WE'RE DOING

- ✓ HARVEST BEST PRACTICE CHECKLIST: Risk assessment for harvest facility food safety
- ✓ HARVEST QUALITY PLAN: Modeled on USDA Good Agricultural Practices
- ✓ PESTICIDE RESIDUE TRACKING, COMPLIANCE & TESTING
- ✓ LOT TRACEABILITY: Each lot is trackable back to picking field

FUTURE GOALS

- INTEGRATE GREENCHIEF PROGRAM WITH HOP GROWERS OF AMERICA FOOD SAFETY MODULE



QUALITY

WHAT WE'RE DOING

- ✓ HARVEST PRACTICES DATA COLLECTION: Picking dates, kilning, conditioning & storage
- ✓ BREWER FEEDBACK TO FARMS: Sensory data from lot specific selection

FUTURE GOALS

- INCREASE HARVEST DATA COLLECTION: Fertility, irrigation, training & IPM practices
- EXPAND BEST HARVEST PRACTICE GUIDE: Monitor harvest practices that ensure hop quality preservation

HARVEST READINESS RANKING

HERE'S HOW WE'RE DOING

GREEN LEVEL - PERFORMING

56% ↑ 10% 2015 TO 2016

YELLOW LEVEL - DEVELOPING

15% ↑ 4% 2015 TO 2016

RED LEVEL - NEEDS IMPROVEMENT

29% ↓ 14% 2015 TO 2016

Percent of harvest facilities meeting each harvest readiness level from crop year 2016 walk-throughs compared to 2015 rankings. Yellow and red facilities will be revisited next spring to assess progress and continue improvement efforts. Significant risks to safety or hop quality are addressed immediately with each farm regardless of ranking.

QUALITY SCORE

The Quality Score is a uniform grading system used to evaluate lots, predict customer preference, and as a continuous improvement tool for communication with growers. This is an index based on alpha, oil, HSI, brew cut evaluations and bale moisture, as well as seed, leaf, and stem content. Lot scores are weighted by size, such that a 20 bale lot will have less impact on a grower's score than a 200 bale lot. The model determines a score for each lot in seven categories that are already measured as part of our harvest process. Scores in these individual categories can be used to evaluate a grower's strengths and weaknesses while the combined Quality Score can be used to evaluate the grower's overall performance on each delivered variety.

TRAIT SCORING

Traits are scored either based on a specification (seed, stem, moisture) or based on the difference from the average value for each variety, crop year and state. This means that when determining if a lot of 2016 Oregon Cascade has an above or below average alpha, we only compare it to other 2016 Oregon Cascade. This is preferable to setting a particular specification for alpha, oil, HSI and brew cut rating because it allows us to take into account seasonal and state to state variation.

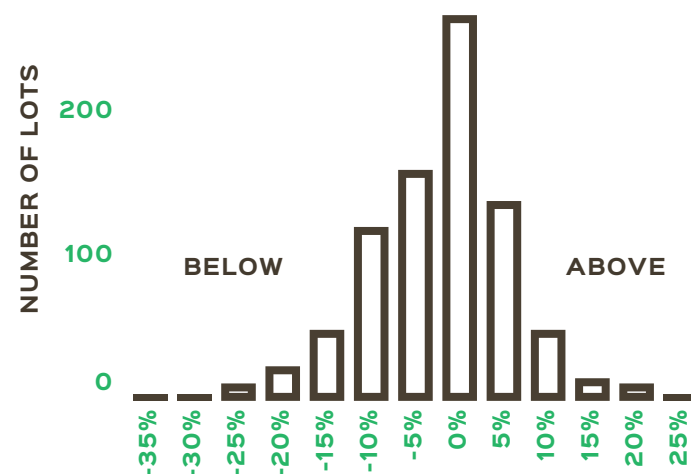
Lots that are above average receive points. Lots below average lose points. For alpha we've defined two point scales, one for varieties typically delivered on alpha contracts and the other for all other varieties. Alpha varieties continue to gain points as alpha increases whereas other varieties begin to lose points if the alpha is high enough above the mean that it begins to be less true to variety.

The scoring for bale moisture, % seed, and % stem is strictly based on the tolerances that we set and is not adjusted for state or variety means. Lots that are within specifications for seed, stem and moisture receive no points but lose points when outside of tolerances.

QUALITY SCORE MEASURING OVERALL HOP QUALITY

FACTORS
ALPHA
OIL
HSI
VISUAL
SEED
STEM
MOISTURE

POINTS ASSIGNED FOR % ABOVE OR BELOW SEASON AVERAGE FOR EACH FACTOR



	LOT 1	LOT 2
ALPHA	2	1
HSI	1	-1
OIL	3	-2
SEED	0	0
STEM	0	0
MOISTURE	-2	0
VISUAL	0	-2
QUALITY SCORE	4	-4

EXAMPLE SCORING OF 2 LOTS

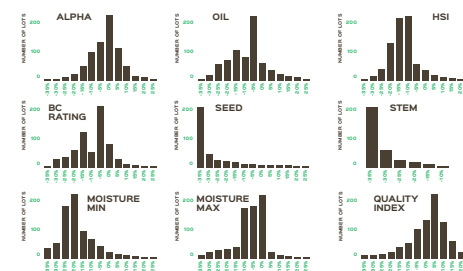


Figure 11. Two sample lots from the 2015 harvest. Lot 1 has very high oil relative to other lots of that variety (in its state) and it scores high for alpha without losing points for being so high as to be untrue to type. It loses points because the minimum bale moisture was far below our specification. In contrast, Lot 2 has poor oil content, HSI was higher than normal, and the visual brew cut rating was poor.

QUALITY AWARD

In March of 2016, our Board of Directors (all growers) elected to create the GreenChief® Quality Award and use the Quality Score to choose four growers to recognize annually.

In order to qualify, a grower must achieve green on their Harvest Facility Assessment. Large growers deliver >600,000lbs and small growers <600,000lbs. Awards were given to the top two growers with highest weighted average Quality Score.

2015 GREENCHIEF® QUALITY AWARD

LARGE GROWER WINNERS

B.T. LOFTUS

VAN HORN FARMS

SMALL GROWER WINNERS

CAPITOL FARMS

BLACKSTAR RANCH

FOOD SAFETY ON THE FARM

YCH has adopted a risk-based approach to assessing and improving the food safety level of hop harvest facilities. We provide each farm with a copy of our Best Harvest Practices Quality Manual, a detailed farm food safety plan which they can use to implement their own program. GreenChief® is modeled after USDA Good Agricultural Practices (GAP) and is fully compatible with the GlobalGAP third party standard.

Each farm facility we receive hops from is assessed in both spring and at harvest using the GreenChief® Harvest Readiness checklist. After the walk-through, we provide an individualized GreenChief® Action Plan that itemizes tasks that need to be completed, but makes each grower responsible for providing the timeline for when each task will be completed.

It is important to note that a red facility is not unsafe or by definition low quality. We immediately address significant hazards to safety or quality as they are found. Rather, the range of facility rankings reflects the more rigorous expectations of brewers in relation to safe, tour-ready facilities and the investments many growers are making to improve their operations.

During this period of transition, our goal is to help growers improve without becoming the industry regulator. Because we believe food safety is important for the entire industry, and not something we should be competing on, we freely share our program with interested parties. We have provided Hop Growers of America with full details to assist in the development of industry-wide best practices for food safety programs to be distributed by 2017 harvest. We have also shared it with the Hop Quality Group for their feedback and suggestions.

HOP SELECTION

Hop selection is an interdepartmental quality program which contributes to fulfilling brewer preferences for particular flavor profiles and helps provide essential quality data for YCH. Selection originated as a way for brewers to evaluate the current crop and choose hops for their specific needs. It has since evolved into one of the most effective forms of providing brewer feedback to farms. The selection process promotes improved hop quality through transparent communication and candid feedback. A brewer's qualitative commentary will be used to allocate hops to contracts and help specify consistent blends for the entire brewing community. Ultimately, all lot specific feedback and any corresponding lab data is provided directly to the farms to research any correlations between sensory, analytics, and best farming practices.

During selection we emphasize the variable nature of hops. The variation exhibited from year to year and yard to yard should be expected and embraced. We make every attempt to present a balanced representation of the crop year during selection, keeping in mind that brewers have many ways of judging the perfect hop.

Of course not all of our customers participate in selection. For most breweries, traveling to Yakima and contracting the volume of a variety necessary to make a full pellet run feasible is not possible. In these circumstances, our experienced staff take on the responsibility of selecting lots, creating blends, and allocating varieties in a way that balances quality and customer satisfaction.

As the quality and consistency of our hop products continue to improve, we work to transform selection into a communication tool between growers and brewers, rather than a means for breweries to claim their specific lots.

GROWER SELECTION REPORT

Mosaic™ Brand															Farm Name	
Harvest Date	Lot ID	Bales	Net Lbs	Kiln Depth	Kiln Temp	Min Moist	Max Moist	Alpha	Beta	HSI	Oil	Seed	Stem	Sensory Rating (3-12)	Times Shown	Brewers Preferred
9/12/2015	99-000-000	164	32948	30	135	8.5	10.0	12.7	3.6	0.248	1.7	1	0	8	9	67%
Brew Cut Comments				trop fruit, melon, lemon, earthy, pine												
Customer								Lbs Selected	Ranked (1 Best)	Rating (5 Best)	Comments					
CUSTOMER A								2411	2	4	nice tropical, mango and pine					
CUSTOMER B								1607	2	4	some brown, burnt edges, trop fruit, catty					
CUSTOMER C								4621	1	3	resin, melon, peach, lemon, grass					

Figure 12. Excerpt of YCH grower feedback report for one lot showing the comments from both YCH and each brewer who provided feedback at selection. This detail is very helpful in showing a farmer which brewer ended up with their hops and how often brewers had positive or negative feedback. The comments can be used to gauge whether changes on the farm are having positive or negative effects on brewer preference.

LAB

We have an extensive Quality Control department that includes an in-house laboratory on our Sunnyside campus. All analyses are done in accordance with The American Society of Brewing Chemists (ASBC) and European Brewing Convention (EBC) methods. Within the lab, technicians perform a variety of hop analyses that aid in the harvest and production of YCH HOPS' premium hop products.

During harvest season, our lab is made available to hop growers to send wet hop cones for dry matter analysis, indicating ripeness and maturity. Pre-harvest lab analysis helps ensure that hops are picked during the optimal harvest window and contain peak oil and brewing values. As the hops are harvested and the bales arrive at YCH, representative samples of each delivery and lot are taken to the lab where they are analyzed for alpha, beta, Hop Storage Index (HSI), total oil and oil components analysis. Data is then entered into YCH's enterprise resource management software allowing lots to be chosen for

samples, leaf repacks, and pellet blends. When production commences, samples are delivered to the laboratory throughout each process, from repackaging whole leaf hops to the production of downstream products. Various lab tests are performed to gather quality control information including storage stability, alpha variation within the pelleting process and extract efficiency. The comprehensive data collected within the laboratory is used to ensure consistency and provide customers with accurate and valuable information via a Certificate of Analysis.

Through our on-site laboratory, YCH is able to implement a vertically integrated quality control program where quality checks are performed for growers, on the receiving docks and through production to the final product. The ability to provide documented quality assurance to our brewing customers allows YCH to maintain our position as a leading hop supplier both in quality and sustainability.



COMPLIANCE

We have developed a monitoring program to efficiently comply with food safety and import regulations. We maintain complete traceability throughout the supply chain and use spray records obtained for every field of hops to manage export compliance. Reports on the levels of select heavy metals and pesticide residues are obtained on randomly-selected lots of whole cone, hop pellets and extract, twice per year, or as needed. The related reports and Certificates of Analysis can be obtained on demand.

To assure test objectivity, samples are submitted to nationally-recognized laboratories for analysis and reporting. All analytical data and relevant laboratory contact information is reported in our product documents. Copies of original Certificates of Analysis are also available upon request.

Based upon this monitoring program, we certify that the hop products delivered to our customers conform to applicable food safety legislation and regulations.

FOOD SAFETY AT YCH FACILITIES

Our facilities operate in accordance with current Good Manufacturing Practices (GMP) for food processors. All employees are given training on food safety during orientation and for their specific position. We employ a Hazardous Analysis and Critical Control Points (HACCP) system for all areas of production. These programs are integrated with our ISO management systems. Detailed information on these programs is available upon request.

ISO PROGRAMS



We have implemented two management systems created by the International Organization of Standardization (ISO). ISO is an independent, non-governmental organization that develops solutions and management practices to address global issues. ISO programs motivate participating organizations to strive for continuous improvement.

ISO 14001:2004 – Requirements and international standards are used to create a framework for our environmental management system. By adhering to these requirements, we will actively track the use of resources and production of waste within our operations to improve our overall environmental performance. We achieved ISO 14001:2004 certification on both campuses in July 2016 and will now be working towards additional certification based on the newly revised criteria of ISO 14001:2015.

ISO 9001:2008 – YCH's ISO 9001 based quality management system contains tools and guidance that ensures our products and services fulfill quality requirements, from both a regulatory and customer satisfaction perspective. Certification for both campuses was achieved in October of 2015.



CONTACT US

Feedback regarding this report can be submitted to
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