



BrewTimes™

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BALAJI ENZYME & CHEMICAL PVT LTD

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We **M/s Balaji Enzyme & Chemical Pvt Ltd**, are pleased to bring to you our October 2023 month edition of BrewTimes.

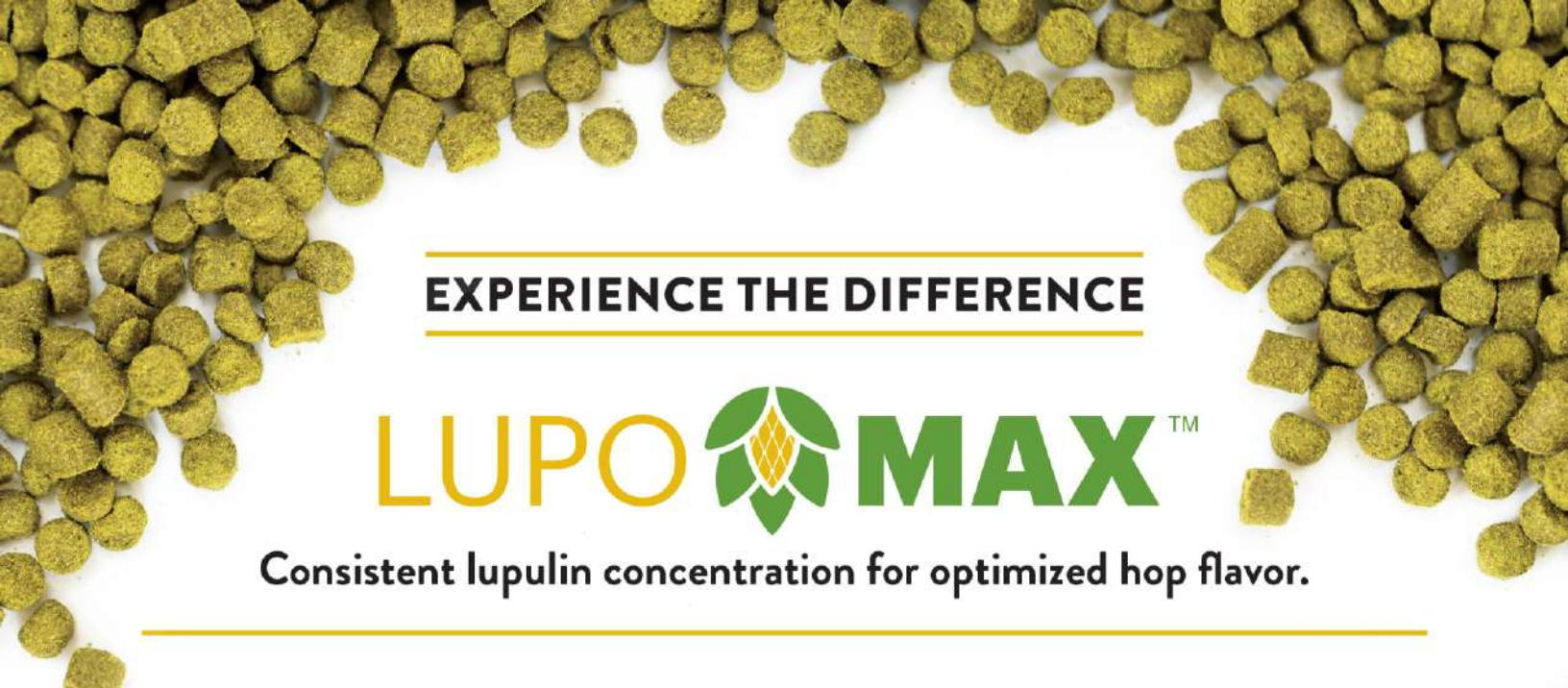
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Sustainability is important to us – like it is to you. Don't short yourself on anything less than a product designed to work as hard as you do! With LUPOMAX®, you use less hops to make more beer, so it saves on shipping, storage, and brewery handling. Plus, less solids means less waste and more beer to sell.

SENSORY PLUS™ PROCESS

Our professionally trained sensory team, using our Sensory Plus™ process, assures each batch of hops used to make LUPOMAX® pellets delivers consistent, true-to-type hop flavors, year-after-year. Sensory Plus™ is sensory-based hop selection coupled with advanced technical analysis and our proprietary production process.



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EFFECTS OF FUSARIUM-INFECTED BARLEY MALT GRAINS ON BREWING AND BEER QUALITY



BIJAY BAHADUR

**B.Sc. (Hons.); B.Tech. (Gold Medallist); PGDEE; FIE;
Chartered Engineer (India) PE (ECI); LMIChE; LMAFST (I)**

Introduction

Fusarium is a filamentous fungus that includes various species known to cause plant diseases and produce mycotoxins. When Fusarium infects barley, it can lead to a condition known as Fusarium head blight (FHB) or scab. This can have significant implications for brewing and beer quality due to the potential presence of mycotoxins and changes in the composition of barley malt.

Big breweries require consistent and high-quality standards. The global beer market is growing at over 2%, driven by emerging markets like Asia, Africa, and Latin America. Barley malt serves as the primary brewing material worldwide in beer production.

The complexity of wort fermentability is well-known, with various malt quality parameters influencing the process. Adequate endosperm modification is crucial for optimal fermentation. Malt modification directly impacts water quality.

Fusarium species fungi impact wort and beer characteristics. The infected grains underwent adverse chemical and physical changes, reducing yield and quality. Contaminated malt exhibited altered enzyme hydrolysis compared to uninfected malt.

Although the boiling process in brewing eliminates microorganisms, highly heat-resistant mycotoxins like deoxynivalenol (DON) can persist. Mycotoxin transfer to the final product depends on grain infection and the brewing process. Fusarium-infected malt can transfer DON to beer, spent grains, and rootlets. Regulatory limits for DON in processed cereal-based products are 200 µg/kg, with a tolerable daily intake of 1 µg/kg.

Fusarium can produce hydrophobins, surface-active proteins inducing gushing in beverages like beer. Contaminated barley and malt have a higher gushing propensity. Fusarium mycotoxins, DON, and nivalenol (NIV) persist throughout beer production, leading to processing and quality challenges. Yeast sensitivity to these mycotoxins often inhibits growth and can cause premature flocculation.

- 1. Lower pH:** The pH of the wort (the liquid extracted from the malt) produced from infected malt is typically lower than that of the wort produced from uninfected malt. This can lead to problems with the fermentation process, as yeasts prefer to ferment at a neutral pH.
- 2. Higher free amino nitrogen (FAN):** FAN measures the nitrogen content of the wort. Higher levels of FAN can lead to a hazy beer and can also make the beer more susceptible to spoilage.
- 3. Higher beta-glucans:** Beta-glucans are long chains of sugar molecules that can form gels. Higher beta-glucan levels can make the wort and beer more viscous, affecting the brewing process and the final beer characteristics.
- 4. Premature yeast flocculation:** Flocculation is the process by which yeast cells clump together and sink to the bottom of the fermentation vessel. Premature flocculation can lead to a cloudy beer with a shorter shelf life.
- 5. Different amino acid profile:** The amino acid profile of the beer can be different if it is brewed with infected malt. This could potentially impact the beer's flavor and aroma.
- 6. Mycotoxin Contamination:** Fusarium species can produce mycotoxins such as deoxynivalenol (DON) and zearalenone. If these mycotoxins are present in the infected barley malt, they can survive the malting and brewing processes, potentially leading to mycotoxin contamination in the final beer. Mycotoxins harm human health and can lead to various adverse effects, including nausea, vomiting, immune system suppression, and potential long-term health risks.
- 7. Flavor and Aroma Changes:** Fusarium-infected barley malt can have altered chemical compositions due to the fungal activity and production of enzymes. Such outcomes could bring about alterations in the resultant beer's flavor and aroma. Undesirable flavors such as earthy, musty, or moldy notes may develop, negatively impacting the overall beer quality and consumer perception.
- 8. Enzyme Activity:** Fusarium infection can activate enzymes in barley grains, particularly those involved in breaking starches and proteins. This can result in increased levels of enzymes like alpha-amylase and protease. While these enzymes are essential for brewing, excessive levels can lead to over-attenuation, loss of body and mouthfeel, and potential haze formation in the beer.
- 9. Malt Quality:** Fusarium infection can lead to physical and chemical changes in barley grains, affecting their germination and modification during malting. This can result in reduced malt extract yield, lower enzyme activity, and inconsistent malt quality. Incomplete modification can also impact mashing efficiency and the overall brewing process.
- 10. Beer Stability:** Fusarium-infected malt can contribute to haze formation in the final beer due to increased protein levels and other compounds released during malting and mashing. Haze can affect the visual appearance of the beer and lead to stability issues, reducing its shelf life.

11. Quality Control Challenges: Brewers need to monitor and control the quality of their raw materials, including barley malt. Fusarium-infected barley malt can introduce variability in the brewing process, making it more challenging to maintain consistent beer quality from batch to batch.

Mitigation of the impact of fusarium-infected barley malt on brewing and beer quality:

Malting companies can take several measures, such as:

a) Quality Control: Implement rigorous quality control measures for raw materials. Regularly test barley malt for mycotoxins and other contaminants.

b) Source Selection: Choose barley varieties less susceptible to Fusarium infection and mycotoxin production.

c) Cleaning and Sorting: Clean and sort barley grains to remove visibly infected kernels before malting.

d) Malting Process: Adjust the malting process as needed to minimize the effects of infection, such as modifying germination and kilning conditions.

e) Blending: Consider blending Fusarium-infected malt with healthier batches to dilute negative impacts.

f) Testing at Different Stages: Monitor the brewing process at various stages to identify any unusual changes and adjust as necessary.

g) Using fungicides: Fungicides can be used to control Fusarium infection in barley. Nonetheless, the use of fungicides demands cautious contemplation, given their potential to detrimentally influence both the environment and human health.

h) Good agricultural practices: Implementing good agricultural practices, like crop rotation and effective drainage, can mitigate the likelihood of Fusarium infection.

Fusarium-infected barley malt can have significant implications for brewing and beer quality due to mycotoxin contamination, flavor changes, enzyme activity, malt quality, beer stability, and quality control challenges. Breweries must remain vigilant in their efforts to detect and address Fusarium related issues to ensure the production of safe and high-quality beer.

Conclusions

Using infected malt grist with approx. 20% of the initial barley grains affected by Fusarium significantly impact final beer qualities and transfer mycotoxin DON to beer. Despite minor variations between infected and uninfected malt/beer attributes, their cumulative effect detrimentally influences overall beer quality. Wort with fusarium-infected malt leads to premature yeast flocculation. This does not affect the final beer extract or attenuation percentage due to yeast flocculation.

The yeast struggles to fully process all ketones and acetaldehyde, resulting in increased concentrations of total esters, fuel alcohols, fatty acids, and DMS. Premature yeast flocculation likely generates more off-flavors due to non-volatile yeast products, altering taste, mouthfeel, and yeast autolysis, imparting bitterness and yeasty aromas.

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CRAFTING OPPORTUNITIES: THE EXPANDING HORIZONS OF THE BEER MARKET



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Crafting Opportunities: The Expanding Horizons of the Beer Market

Abstract: The beer industry has experienced significant transformations over the years, evolving from a limited selection of mass-produced lagers to a diverse and dynamic market filled with craft breweries and innovative brewing techniques. This article explores the increasing potential of the beer market, delving into various factors that have contributed to its growth. From the rise of craft beer to changing consumer preferences and global market trends, we examine the exciting developments that are shaping the future of this beloved beverage.

1.Introduction

The beer industry, once dominated by a few major players, has undergone a remarkable transformation in recent decades. This transformation has given rise to a dynamic and ever-expanding market, with craft breweries, specialty brews, and innovative brewing techniques taking center stage. In this article, we will explore the increasing potential of the beer market, examining the various factors that have contributed to its growth and the exciting opportunities that lie ahead.

2.The Craft Beer Revolution

One of the most significant developments in the beer industry has been the craft beer revolution. We'll delve into the history of craft brewing, the factors driving its growth, and its impact on the overall beer market. From microbreweries to innovative brewing methods, we'll explore how craft beer has carved out a substantial share of the market.

3.Changing Consumer Preferences

Consumer preferences in the beer market have evolved, reflecting a growing demand for variety, quality, and unique flavors. This section will analyze the shift from mass-produced lagers to a more diverse range of beer styles, including IPAs, stouts, and sours. We'll also discuss the influence of health-conscious consumers and the rise of low-alcohol and non-alcoholic beers.



4.Global Market Trends

The beer market is not limited by geographic boundaries, and it is essential to examine global market trends. This section will provide an overview of international beer consumption patterns, highlighting emerging markets, and exploring the impact of globalization on the beer industry.

5.Technology and Innovation

Innovation is a driving force behind the beer market's growth. We'll discuss how technology, from advanced brewing equipment to digital marketing strategies, has played a crucial role in shaping the industry. Additionally, we'll explore sustainability efforts and their influence on brewing practices.



6.Economic Factors and Market Expansion

Economic factors, such as pricing strategies, taxation, and distribution, play a vital role in the beer market's expansion. We'll analyze the impact of these factors on the accessibility and affordability of beer for consumers, as well as their effects on the brewing industry.

7.Challenges and Opportunities

While the beer market is full of potential, it also faces challenges. We'll examine issues such as competition, changing regulations, and supply chain disruptions. However, we'll also highlight the opportunities for growth and innovation that arise from overcoming these challenges.

8.Conclusion

The beer market's potential for growth is undeniable, driven by the craft beer revolution, changing consumer preferences, global market trends, innovation, and economic factors. As the industry continues to evolve, opportunities abound for both established breweries and newcomers. By understanding and adapting to these trends, stakeholders in the beer industry can position themselves to thrive in this dynamic and everexpanding market.

In this article, we've explored the various facets of the beer market's increasing potential. From the craft beer revolution to changing consumer preferences, global market trends, technology and innovation, economic factors, and the challenges and opportunities that lie ahead, the beer industry is in a state of constant evolution. This article provides a comprehensive overview of the factors contributing to the growth of the beer market and highlights the exciting opportunities it offers to both brewers and consumer.

HOW TO TARGET STRIKE WATER TEMPERATURE TO ACHIEVE EXACT MASH TARGET TEMPERATURE.



SAURABH N. PERKAR

BREWER

ALCHEMY MICROBREWERY, BANGALORE

Mash temperature is a really critical parameter in converting malted barley starch into desired unfermentable sugars. As optimum temperature activates desired target enzymes such as alpha amylase, beta amylase, limit dextrinase etc. which have different optimum temperature and have different effect on final beer.

There are many way brewers do mashing, like multistep-mashing, single temperature mashing and raising temperature of mash taking out part of wort heating it and mixing it into mash again. There are so many fancy words to call above mentioned methods by brewers.

So, in any kind of mashing process very first temperature is really important. That is ideally done by taking desired strike water volume and temperature.

The reason considering proper strike water temperature is so important because many brewers have to mashing in a vessel which doesn't have heating jacket. So trying to mix it with hot water again to raise temperature is not ideal because it can mess up with mash thickness and ultimately not getting desired quality of wort.

So how a proper strike water temperature can be achieved as per target mash temperature.

So, lets consider we need to mash-in 100 kg milled grist with 300 Liter of strike water. So need to consider some other factors as well. Those are,

❖ Weight of water which will be (volume * density)

❖ Heat capacity of water = 4.2 kJ/kg/C

❖ Heat capacity of grist, which we need to estimate but with data I have collected with lots of example can consider 2.3 kJ/kg/C.

❖ Temperature of grist.

So, getting back to our example we have following data,

Weight of water = (300 Liter * 1 kg/Liter) = 300 kg

Heat capacity of water = 4.2 kJ/kg/C.

Weight of grist = 100 kg

Heat capacity of grist = 2.3 kJ/kg/C.

Temperature of grist = 29 degree C

Target temperature of mash = 68 degree C

If we solve it with rule of RHS=LHS thermal balance rule we can get

value of strike water temperature which in this case is 75 degree C.

But there is one important factor that can affect value of strike water temperature that is vessel temperature. If you have already preheated your mash kettle then it can help to use almost 3 degree less temperature of strike water. If we consider all of this factors we can always get exact results with mash-in process.

That's all for this time, till next time cheers to brewing amazing beers.

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When we think of beer, we often picture the refreshing fizz that greets our senses as we crack open a cold one.

That delightful carbonation isn't just for show; it plays a pivotal role in the overall beer experience. Carbonation, or the presence of carbon dioxide (CO₂) in beer, affects everything from its aroma and taste to how it pours from the tap. Let's explore the significance of carbonation in beer, the different levels found in various beer styles, and its impact on the beer pouring system.

Carbonation is more than just bubbles; it's a key factor in a beer's mouthfeel and aroma. Carbon dioxide enhances the beer's effervescence, creating that delightful sensation on your palate. This effervescence can range from gentle to robust, depending on the beer style.

Different beer styles call for varying levels of carbonation per volume. For example, lighter beer styles like pilsners and wheat beers typically have higher carbonation levels, around 2.5 to 3.0 volumes of CO₂ per volume of beer. This high carbonation accentuates their crispness and refreshment. On the other hand, styles like stouts and porters tend to have lower carbonation levels, around 1.5 to 2.0 volumes, which contribute to their smoother and creamier textures.

The carbonation level in beer can have a significant impact on the beer pouring system, especially in commercial settings. If the carbonation level is too high for the style, it can result in excessive foaming during pouring. This can lead to wasted beer, slower service, and frustrated patrons.

To understand it better, consider a bar that serves a popular pilsner with a higher carbonation level. If the bartender pours the beer too aggressively, it can result in a glass full of foam, leaving the customer with less beer than they expected. This not only affects the customer's experience but also costs the bar money in lost product.

To solve foaming issues while pouring, it's essential to understand the beer's carbonation level and handle it accordingly. For instance, for highly carbonated beers, bartenders should use specialized glassware designed to avoid excess foam. They can also adjust the pouring technique, pouring at an angle and allowing the beer to slide gently down the side of the glass.

In summary, carbonation is a fundamental element in beer, influencing its taste, aroma, and mouthfeel. Different beer styles require varying carbonation levels per volume, and getting it right is crucial for serving a perfect pint. The carbonation level also plays a vital role in the beer pouring system, where understanding and managing it can make or break the customer's experience. By knowing the carbonation levels of the beers they serve and employing the right techniques, bars and breweries can ensure that every beer is poured to perfection, delighting beer enthusiasts everywhere.

Wort Clarification Objectives in Beer Brewing



Rohit Chauhan

Introduction

Beer brewing is a craft that combines science and art to produce a wide range of beer styles, each with its unique flavor profile and characteristics. One crucial step in the brewing process is wort clarification. Wort is the sugary liquid extracted from malted grains during the mashing process and serves as the foundation for beer production.

Clarifying wort involves removing unwanted solids and proteins to ensure a clean and consistent fermentation. In this article, we will explore the objectives of wort clarification in beer brewing.

1. Remove Undesirable Solids

One of the primary objectives of wort clarification is to remove undesirable solids from the liquid. During the mashing and lautering stages of brewing, solid particles such as grain husks, proteins, and hop residues can end up in the wort. These solids can cause several problems during fermentation, including off-flavors and haze in the final beer.

To achieve this objective, brewers typically use a combination of methods, including hot and cold break formation, whirlpooling, and sedimentation. These techniques help solids settle to the bottom of the brew kettle, allowing for the removal of clear wort.

2. Prevent Undesirable Compounds

Wort clarification also plays a critical role in preventing the formation of undesirable compounds that can affect the beer's taste and aroma. When proteins and tannins from malt and hops are not adequately removed from the wort, they can interact with yeast and other compounds during fermentation, leading to haze and off-flavors in the finished product.



The removal of these unwanted compounds is achieved through a process known as the hot break. During this phase, the wort is boiled vigorously, causing proteins to denature and coagulate, making them easier to remove. Proper wort clarification at this stage helps ensure a clean and stable beer.

3. Improve Fermentation Efficiency

Clear wort also enhances fermentation efficiency. When yeast is introduced to wort that is free of excessive solids and undesirable compounds, it can ferment more effectively. This results in a healthier yeast population, shorter fermentation times, and fewer issues such as stuck fermentations or off-flavors.

Additionally, a well-clarified wort provides yeast with consistent access to nutrients, which is crucial for yeast health and overall fermentation performance. As a result, brewers can maintain better control over the fermentation process, leading to a more predictable and consistent beer.

4. Enhance Flavor and Aroma

Another important objective of wort clarification is to enhance the flavor and aroma of the final beer. By removing unwanted compounds and solids, the brewer can create a cleaner canvas for the yeast and hops to express their unique characteristics. This allows the intended flavors and aromas to shine through, resulting in a more balanced and flavorful beer.

Furthermore, a clear wort minimizes the risk of unwanted fermentation byproducts that can contribute to off-flavors, ensuring that the beer's taste remains true to the brewer's intentions.

5. Achieve Beer Clarity

Finally, wort clarification is crucial for achieving beer clarity. When wort is free from haze-causing particles and proteins, the finished beer will be visually appealing with a brilliant clarity. This is especially important for certain beer styles like lagers and pilsners, where clarity is a hallmark of quality.

Conclusion

Wort clarification is a critical step in the beer brewing process that serves multiple objectives. It not only removes undesirable solids and compounds but also improves fermentation efficiency and enhances the flavor and aroma of the final product. By achieving these objectives, brewers can create beers that are not only delicious but also visually appealing, meeting the high standards of quality that beer enthusiasts expect. Understanding the importance of wort clarification is essential for any aspiring or experienced brewer looking to craft exceptional beers.



AKSHAT JAIN

Business Development Manager-Craft Brewing

Re-using dry hops, also known as "second use" or "double dry hopping," involves using hops that have already been used once in a previous batch of beer. This practice has gained some attention in the craft brewing community, as it can potentially reduce waste and save money. However, there are some important considerations to keep in mind if you're thinking about reusing dry hops:

1. Loss of Aromatic Compounds: Hops used in dry hopping contribute aroma and flavor compounds to the beer. When hops are re-used, some of these compounds may have already been extracted in the first batch, leading to reduced aroma and flavor potential in subsequent batches.

2. Variability: The extent to which hops lose their aromatic compounds during the first use can vary widely depending on factors like hop variety, beer style, and how they were used in the first batch. This can make it difficult to predict the exact impact of re-using the hops.

3. Bacterial Contamination: Hops used in brewing have antibacterial properties, which help prevent the growth of unwanted microorganisms. Re-using hops might reduce their effectiveness in preventing bacterial contamination.

4. Yield and Efficiency: Hops that have been used once already might not yield as much flavor and aroma in the second use. This could result in needing to use larger quantities of hops to achieve the desired sensory impact.

5. Consistency: If you're aiming to brew consistent batches of beer, re-using dry hops might introduce variability between batches due to the factors mentioned above.

6. Experimentation: Re-using hops can be an opportunity for experimentation. Brewers might deliberately choose to use re-used hops to achieve unique flavor profiles or to add complexity to certain styles of beer.

7. Quality Control: Brewers need to monitor the quality of the hops closely, as their sensory impact diminishes with each use. Assessing the condition of the hops before reuse is important to avoid off-flavors.

If you're interested in trying to re-use dry hops, here are a few tips to consider:

- **Test Small Batches:** Start by testing the practice on a small scale before committing to larger batches. This will help you gauge the impact and adjust your process accordingly.
- **Monitor Aroma and Flavor:** Keep track of the aroma and flavor contributions of the reused hops in the second batch. This will help you decide whether the practice is worth pursuing for your specific brewing goals.
- **Consider Beer Styles:** Some beer styles are more forgiving when it comes to variations in hop aroma and flavor. Experiment with re-used hops in styles where the impact might be less critical.
- **Maintain Sanitation:** Ensure that all equipment and materials are properly sanitized to prevent contamination. This is especially important if you're concerned about the potential loss of the hops' antibacterial properties.

In summary, re-using dry hops can be an interesting experiment for brewers looking to reduce waste and explore new flavors, but it's important to approach it with caution and careful consideration of the potential impact on the final beer.



MAMTA BHARDWAJ

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A large portion of India is not suitable for viticulture. Due to diversity of climate and geology there are some areas having suitable terroir for wine making.

Vineyards in India range from the more temperate climate of the northwestern state of Punjab down to the southern state of Tamil Nadu.

In India's larger wine producing areas are located in Maharashtra, Karnataka and Tamil Nadu. Deccan Plateau, Baramati, Nashik, Pune, Sangli and Solapur are the regions of Maharashtra where vineyards are present. In Karnataka vineyards are located near Bangalore.

Red/Black grape Varietals

- **Cabernet Sauvignon [kab-er-ney soh-vin-yohn]**

It is often referred as king of red wine grape. This can make easy drinking and deeply complex wines. It has wonderful flavors of blackcurrants, blackberry, chocolate, tar and leather. In India, it shows blackcurrant cordial, stalky note in the wines.

- **Grenache [gruh-nahsh]**

It is primarily used as main ingredient in some roses and fortified wines. It produces fruity high alcohol wines with raspberry flavors. It produces light to medium-bodied reds with intense fruit and soft tannins.

- **Malbec**

Originated in France but it is Argentina's flagship grape variety. It is inky purple with violets and lush fruit aromas. The wine has strong, ripe tannins. The flavors and aromas of malbec include blackberry, cherry and plum with hints of raisins and tobacco.

- **Merlot [mur-loh; French mer-loh]**

Its soft and generous texture and its fresh, ripe fruit appeal make it a favorite for many. In India, it tends to complement a Cabernet blend, adding softness and plummy fruit flavors and gives the wine more weight and balance on the palate.

- **Nero D'Avola**

Sicilian native, this grape is planted in experimental quantities in India. The wines are robust yet soft. They can be concentrated, with dusty aromas (vanilla and coconut from the maturation in oak) and dark berries, plums and spice

- **Pinot Noir [pee-noh nwahr, pee-noh]**

One of the most noble grapes producing wines with lovely texture and complexity. They often possess an exotic bouquet along with a velvety, mouth-filling texture. Pinot Noir exhibits flavors of ripe red fruit, cherry, chocolate, toast and spices.

- **Sangiovese [san joe VA say]**

Sangiovese is the principal grape variety of Chianti and the most widely planted red wine grape in all of Italy. it produces exceptional long-lived wines. Generally medium to full-bodied and savory in style often with an aroma and flavor of sour cherries. Sangiovese also contain complex flavors of earth, tobacco and coffee.

- **Shiraz [shi-rahz]**

This produces spicy medium to full bodied wines with flavours of leather, roasted meats and plum. Indian Shiraz is fruit-driven, with red berries and even berry jam. The wine is rich and the use of oak gives a sweet note on the nose and the palate.

- **Tempranillo:**

The native is Spanish. It is a classic variety. It is often blended with Grenache to produce a range of styles from aromatic strawberry-scented medium weight wines, to full-bodied, savory wines that age well.

- **Zinfandel: [zin-fuh n-del]**

from an Italian ancestry, it produces rich and voluptuous wine. Indian examples are true full-bodied, with a slight earthy and spicy nose. The wines are juicy with red fruit on the palate.

White/Green grape Varietals

- **Chardonnay: [shahr-dn-ey; French shar-daw-ne]**

This is a versatile and adaptable grape variety, this grape can produce fresh medium-bodied to powerful full-bodied wines, which respond well to oak aging. It has distinctive peach, melon and pineapple characteristics. Oak aged wine smell bit buttery with hints of honey.

- **Chenin Blanc: [shen-in blahngk; French shuh-nan blahn]**

it gives medium to full-bodied wines ranging from bone dry with biting acidity to sweet. Indian Chenin has distinct apple like flavors. In warm areas they show a hint of ripe mango and passion fruit. Some residual sugar carries the fruity flavors.

- **Clairette:**

Originally it is from the Rhone, it produces wines that are a musky and perfumed. Wines appear rich on the palate with high levels of alcohol. This is a blend varietal in India; with the Viognier, it gives a rich and slightly sweeter mouthful.

- **Grillo:**

The Sicilian grape variety. It is traditionally used to make fortified wine Marsala. In India it produces a rich, fairly high-alcohol wine with distinctive lemon-citrus aromas. On the palate, the wine is quite robust.

- **Muscat: [muhs-kuh t, -kat]**

A true chameleon! Because range from fine, light whites (sometimes sparkling) to sweet, dark versions (often fortified). Muscat wines are noted for their musky, fresh-grape flavors.

- **Riesling: [reez-ling, rees-]**

This classic grape yields light to medium-weight wines characterized by citrus and floral scents backed by steely acidity. The wines are usually dry. The best examples are generally from cooler climates.

- **Sauvignon Blanc: [soh-vin-yohn blahngk; French soh-vee-nyawn blahn]**

This grape gives fresh and fruity wines smelling of passion fruit and gooseberry. The wines can smell a bit like freshly cut grass with hints of asparagus and capsicum. Indian varietal tastes true. The acidity is quite prominent, making a refreshing wine.

- **Ugni Blanc:**

A neutral-tasting, highly acidic variety that does well in blends. It is, in its neutrality of flavor, similar to many Italian grape varieties. Ugni Blanc produces wines of generally lower alcohol.

- **Viognier:**

A difficult to grow grape but can produce character full wines with apricot and blossom. Indian Viognier is medium to full bodied and very aromatic. There are elements of ripe papaya, apricots and even some exciting floral notes.

Cheers!!!

The Secrets of Barley : A Guide to Brewing Better Beer



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You've probably enjoyed a cold beer after a long day or with friends at the pub. But have you ever stopped to consider the humble grain that makes your brew possible? Barley is the backbone of beer, providing the sugars that yeast convert into alcohol and flavor. The type of barley and how it's malted can make or break your brew.

Barley comes in many varieties, but brewers traditionally favor barley strains that are high in starch and low in protein. The most popular type is two-row barley, named for its double row of kernels. Two-row barley produces a higher yield of fermentable sugars, leading to lighter, crisper beers. Six-row barley has more protein so it's often used in darker, maltier stouts and porters.

But choosing the right barley is only the first step. The malting process, where barley is germinated and then dried, unlocks the seed's starch stores and develops flavor compounds that shape your beer's character. Pale malts produce lighter brews while darker malts create richer, maltier beers.

The humble barley grain is the foundation for the beers we know and love. Understanding the role of barley and the malting process allows homebrewers and craft brewers to produce the highest quality, most flavorful beers. In the coming weeks, we'll explore how to choose the best barley and malts to make your perfect brew.

BARLEY BASICS: THE MOST POPULAR GRAIN IN BEER BREWING

The kilning temperature also affects flavor. Pale malts are lightly kilned, while darker malts are more roasted, producing toasted, nutty, or chocolatey notes. Using different malts provides the building blocks for any beer style. Combine pale malt with caramel malt and roast barley for a stout, or just pale and wheat malt for a hefeweizen.



With an understanding of how barley type and malting process impacts wort and beer, you'll be crafting amazing brews in no time. Experiment with different malts to produce your perfect pint!

Barley is the most commonly used grain in beer brewing, and for good reason. This versatile cereal crop produces the fermentable sugars and proteins needed to make beer. The type of barley, and how it's malted, can have a big impact on your brew. Pale malted barley, like two-row or six-row, is used in most beer styles. Two-row barley tends to have plumper, starchier kernels, while six-row barley has higher enzyme levels, helping conversion during the mash. For the widest range of beer types, a blend of both provides an ideal base.

During malting, barley seeds are germinated, then kilned to stop growth. Germination activates enzymes to convert starch into fermentable sugars. The level of germination – known as the modification – determines how much starch breaks down. Highly modified malts like caramel or crystal malts have lots of unfermentable sugars for sweetness and body. Less modified malts like pale ale malt have more starch to convert during the mash for a lighter body.



MALTING BARLEY: HOW GERMINATION IMPACTS FLAVOR AND QUALITY

Malting barley is a critical step that allows brewers to unlock the flavor potential of barley and ultimately produce better beer. To malt barley, it goes through a germination process where the barley seeds sprout, activating enzymes that convert the starch within the barley into fermentable sugars – the food source for yeast during fermentation.

THE MALTING PROCESS

The malting process typically takes about a week. First, the barley is soaked in water until the seeds germinate. The germinated seeds are then dried and cured. During germination, enzymes break down the barley's starch into fermentable sugars like maltose. The maltose gives beer its characteristic malty sweetness. The longer the barley germinates, the more maltose develops. Pale ales tend to use lighter malts, while stouts use darker, longer-germinated malts.

Germination also produces compounds like amino acids that create nutty or biscuity flavors in the final beer. It develops the barley's husk, which helps with filtration during the mash. And it decreases proteins that can make beer hazy, ensuring a bright, clear product. The malting process, therefore, has an enormous impact on a beer's flavor, aroma, color, clarity, and quality. Brewers can control how long barley germinates to produce different malt types, ranging from pale malts to dark, roasty malts. The specific malts and the malting techniques used significantly contribute to the flavor profile of a beer. So while barley provides the canvas, malting barley paints the picture and helps create the masterpiece that becomes your favorite pint.

THE ROLE OF BARLEY IN THE BREWING PROCESS

Barley is the foundation for most beers. The specific variety and quality of barley used significantly impacts the flavor, color, aroma, and overall quality of the final brew.

MALTING BARLEY

The most common type of barley used in brewing is malting barley. Malting barley has been germinated, converting its starch to sugar. This prepares the barley for the brewing process. The germination is stopped by drying the barley, creating malt. The malt is then crushed to expose the starch and sugars, ready for brewing.

Two-row malting barley is the most popular variety used to make ales and lagers. Its large kernels provide plenty of starch that can be converted to sugar during germination. Six-row malting barley has smaller kernels but produces a higher yield. It is often used for less flavor-forward beers or blended with two-row barley.

THE MASH

The crushed malt is mixed with hot water, activating the enzymes and converting the starch to sugar. This process is called the mash. The specific temperature and duration of the mash impacts how much sugar is extracted. More sugar will result in a higher alcohol beer, while less sugar produces a sweeter beer.

The mash also develops color and flavor compounds that impart notes of caramel, toffee or biscuit. The barley malt is responsible for the golden hue of most ales and lagers. Darker malts will produce deeper amber and brown colors.

WORT AND FERMENTATION

The liquid strained from the mash, called wort, contains the sugars that will be fermented by yeast into alcohol. The specific barley malts used directly determine the wort's sugar profile, which impacts the beer's final ABV and body. The germination, kilning and mashing of barley malts ultimately establish a beer's foundation—its color, aroma, flavor and strength. By unlocking the secrets of barley, you hold the key to brewing better beer.



CHOOSING THE BEST BARLEY VARIETY FOR YOUR BEER

When brewing beer, choosing a barley variety that suits your needs is key to producing the flavor and quality you want. The most commonly used barley for brewing is two-row barley, specifically varieties bred for brewing like Maris Otter or Golden Promise. Six-row barley varieties tend to produce higher yields, but the kernels have less starch, resulting in lower extract potential which impacts the beer's body and flavor.

MALTING AND MASHING

During the malting process, barley kernels germinate, converting the starch to sugar. How long the barley is allowed to germinate (the germination period) affects how much of the starch converts to sugar. A longer germination means more sugar, which is better for fully fermenting strong ales. A shorter germination leaves more unconverted starch, better for full-bodied lagers or stouts. The mashing step activates the barley's enzymes to convert the starch into fermentable sugars. The mash temperature and duration also affect the sugar composition and body of the final beer. Higher mash temperatures favor sugar types that produce lighter beers, while lower temperatures produce more complex sugars for fuller-bodied beers.

HOPS PAIRING

The variety of barley used significantly impacts the bitterness and aroma contributed by hops. Barley that produces lighter, crisper beers pairs well with more aromatic hops. Heartier barley varieties stand up better to robust, bittering hops. Consider the style of beer you want to produce and choose a barley and hop combination that will achieve the right balance of malt and hop flavor. In the end, experiment with different barley types to discover which varieties produce the flavor, aroma and mouthfeel you want in your homebrew.

Pay close attention to the malting and mashing process for each barley, as small changes can lead to big differences in your beer. The barley you choose, and how you choose to malt and mash it, unlocks the secrets to brewing better beer.

TIPS FOR MAXIMIZING BARLEY'S CONTRIBUTION TO BEER FLAVOR

Choose a barley variety suited to your beer style. The most common type of barley used in brewing is two row barley, but six-row barley produces a higher yield and is used in some English ales. Maris Otter is a popular two-row variety that provides rich malty flavor. For darker beers, look for barley varieties that produce more complex, roasted malt flavors. Pay attention to the barley's origin and growing conditions. Barley grown in certain regions may impart distinctive flavor notes due to factors like soil composition, climate, and harvest practices. For example, Maris Otter barley grown in the UK produces classic nutty, biscuity flavors sought after in traditional English ales. Barley from Germany and central Europe is also prized for its rich, malty character.

Consider using malted barley. Malting the barley yourself or sourcing malted barley allows enzymatic conversion of barley starch into fermentable sugars, resulting in a sweeter, more complex malt flavor in the finished beer. Pale malt, Munich malt and roasted malts like chocolate malt provide a range of malt-driven flavors from light and bready to dark and roasty. Do a mini mash to maximize maltiness. If you're an extract brewer, steep some crushed malted barley in hot water to dissolve malt sugars and flavors before adding malt extract. The longer and hotter you mash, the more complex malts you use, and the higher the percentage of malt you steep, the more malty and rich your final beer will be. Consider adding malt extract for extra malt flavor. In addition to base malts, add a pound or two of malt extract, especially amber or dark malt extracts, which contain highly concentrated malt sugars and flavors.



PRIYANSHI SHARMA

Bordeaux (bore-doe) refers to a wine from Bordeaux, France. Over 90% of Bordeaux wines are red wines made with Merlot and cabernet sauvignon.

Fact: The first cabernet sauvignon and Merlot vines originated in Bordeaux only.

Red Bordeaux varieties:

- Cabernet sauvignon
- Merlot
- Cabernet franc
- Malbec
- Petit verdot

White Bordeaux varieties

- Sauvignon Blanc
- Semillon
- Muscadelle

Bordeaux tasting notes

Red wines from Bordeaux are medium-to-full bodied with aromas of black currant, plums and cedar. When you taste the wines they burst with mineral and fruit notes that lead into Savory mouth-drying tannins.

The Bordeaux blend

One of the most important things to know about Bordeaux wines is that they are a blend of grape varieties. The red Bordeaux blend is one of the most copied around the world and it includes cabernet sauvignon, Merlot, cabernet franc and Malbec.

How to serve Bordeaux

With their beautiful labels and green glass, Bordeaux bottles have an elegant look on the table.

- Serve red Bordeaux slightly below room temperature (around 65°F/ 18°C).

- Decant red Bordeaux for atleast 30 minutes.
- Store all your red wines below (65°F/18°C).

Pairing food with Bordeaux wine

Bordeaux wine is a versatile choice that pairs well with a wide range of foods . It complements red meats such as beef, lamb and roasted chicken. Bordeaux also goes well with Savory dishes like mushrooms, herbs and spices.



KANCHAN SINGH

**Chapter Head - South Delhi, India
Apex Wine Club India
1 August 2023, Tuesday**

Wine Growers Association of India (WineGAI) is a recently created association of Indian wine producers which will complement the existing All India Wine Producers Association (AIWPA). It has seven founding members.

WineGAI has been founded with four pillars on the foundation of regulation, technical (viticulture and winemaking), marketing and social responsibility. It is important to note that only the wineries which have branded wines will be taken as members.

The new association will be decentralised with the various wineries responsible in specific, important areas.

The Indian wine industry is expected to benefit from the creation of WineGAI, with a focus on employment generation and outreach to farmers. Both AIWPA and WineGAI will work together and every winery can be a member of both the associations





BrewTimes™



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