



# BAVARIAN SESSION LAGERS

## *A New Twist on Classic Styles*

BY HORST DORNBUSCH



Much ink has been spilled of late on “sessionable” craft brews as a reaction to the high-IBU, high-alcohol, “extreme” beers that have been the trendsetters in much of the craft beer scene since the turn of the millennium. As brewers started to outdo one another creating palate-challenging, super-strong, severely hopped brews that were often spiced with unusual botanicals and fermented with funky microbes, the inevitable question became, “What’s next?” It seems that there was only one possible course of action: many brewers dialed back their alcohol and bitterness values and re-dedicated themselves to the concept of drinkability.

If you’re looking for inspiration for these resulting session ales and lagers, look no further than Bavaria, because it is within this drinking culture that we find the world’s most enduring quaffing beers. Bavarian brews are even suitable to be guzzled out of liter-sized mugs during extended drinking sessions in *biertagens* and beer halls.

Four of these classic Bavarian session lagers evolved to their current form in the 19th century: dunkel, schwarzbier, Märzen, and helles. However, rather than merely recreating them in their former glory, the recipes presented here go one innovative step further. They rely on sophisticated malts from the late 20th century and on cutting-edge hops developed by breeding institutions in Bavaria and Alsace since the turn of the millennium. There is, however, one exception: the use of the hallowed Strisselspalt hops from the 18th century (see sidebar).

In actuality, session beers have most likely been around ever since humans learned how to brew some 10,000 years ago, shortly after the Neolithic Revolution, in the Fertile Crescent of the Middle East; and for most of its history, beer has been considered simply a part of the daily diet. After all, medieval monks called beer “liquid bread.” Before modernity, beer also had to be made from ingredients that grew near the brewery. Today, of course, with globalized commerce trading in



**Clockwise from top:**

The brew crew included (from left) author Horst Dornbusch, Weyermann brewmaster Dominik Maldoner, BSG's Deborah Wood, and Schilling Beer's John Lenzini; Horst Dornbusch carefully monitors the brew; Horst and Deborah Wood go over their brewing notes.



infected beers with such “enhancements” as bark, rushes, mushrooms, soot, chalk, and even oxen bile. Instead, Duke Wilhelm ordered that brewers could henceforth use only water, barley, and hops in their beer making. This effectively standardized virtually all Bavarian brews—except for wheat beers—as all-barley-based beers. Dark color and some degree of smoky character were the inevitable results of using the direct-fired malt kilns of the day.

Contrary to the Duke's expectation, however, beer off-flavors did not disappear, especially in the summer. Thus, in 1553, Wilhelm's successor, Duke Albrecht V, simply outlawed brewing altogether between April 23 and September 29. Unbeknownst to Duke Albrecht, his decree ensured that, henceforth, all Bavarian beers would be clean-tasting lagers, because ale yeasts—and all beer-spoiling microbes—remained dormant during

several hundred malt varieties, hop varieties, and yeast strains, brewers everywhere can grab any historical recipe as a basis for almost limitless experimentation. This allows brewers to unlock the “soul” of a traditional brew, and then identify and accentuate its unique and defining characteristics.

**DUNKEL**

Dunkel (German for dark) was the original quaffing beer of Bavarians between roughly the mid-16th and mid-19th centuries. Its

characteristics were shaped by two seminal decrees from the late Renaissance. One was the 1516 forerunner of what is now known as the German Beer Purity Law; the other was the Bavarian summer brewing prohibition of 1553. Both decrees intended to address the issue of poor beer quality, the causes of which were unknown in those pre-microbiology days. The 1516 edict, proclaimed by Duke Wilhelm IV at a meeting of the Bavarian Assembly of Estates, outlawed the practice of covering up the flavors of

**SESSION GLASSWARE**

Session beers are generally well carbonated, because effervescence brings out a beer's refreshing drinkability. Key to the proper enjoyment of such beers, therefore, is the choice of glassware. The conventional shaker pint glass—ubiquitous in North America—is simply inadequate to showcase the subtlety of classic session beers. Importantly, when a pint glass is completely filled to the rim, it leaves no space for an appetizing head of foam to rise, and the bouquet of hop and malt aromas simply has no place to linger. Thus, the beer loses both its visual and olfactory appeal...even before the first sip!



Photos courtesy of Horst Dornbusch; SAHM (beers)

## STRISSELSPALT HOPS

The late-maturing, low-alpha Strisselspalt is the classic, indigenous hop of Alsace and the progenitor of virtually all hops grown in that region. Strisselspalt has been cultivated in Alsace since at least the 1770s—it's much older than the other hop varieties used in this series of experimental brews. However, given its genetic dominance among modern Alsatian cultivars, it is virtually impossible to ignore. This *grande dame* of Alsatian hops has a balanced mixture of aroma oils that provides a mildly floral-fruity profile, with some lemon-like citrus aromas, a gentle spiciness, and a pleasant bouquet of hay. With only about 1.8 to 3 percent alpha acids, however, it has very little bitterness. As an aroma hop, it resembles the Bavarian Hersbrucker.

the cold winter months in the foothills of the Alps. The resulting hopped, darkish, slightly roasty and smoky lager soon became known as “red beer” (rotbier) or “brown beer” (braunbier) to distinguish it from the “white” Bavarian wheat beer (weissbier).

Advances in microbiology and technology in the 19th century, however, gave brewers new tools to make beers of any color and flavor, under controlled conditions. These tools included pneumatic malting, mechanical refrigeration, and scientific yeast management. As a result, the once ubiquitous rotbier became just one style in a diverse and proliferating array of Bavarian beers. Near the end of the century, rotbier even acquired a new name—dunkel—to set it apart from the emerging helles (German for pale or light). Additionally, dunkel was no longer made with just a single brownish malt, but with a combination of grains that emphasized the brew's malt-forward complexity and rich, lingering, malt-aromatic finish. The beer had also lost almost all of its roastiness and smokiness. Thus, because the requirements of dark opacity without roastiness are inherently antithetical, an authentic dunkel—just like an authentic schwarzbier—is now considered among the most difficult beers to brew.

Our solution to this color-flavor dilemma is a base malt mix of Barke Munich (52 percent of the grain bill), Barke Pilsner (34 percent), and CaraMunich® I (10 percent). The malts made from Barke barley are especially aromatic, while CaraMunich delivers some depth of color, an intense malt aroma, and notes of biscuit. Overall, this malt combination gives the brew a chewy mouthfeel,

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## HOP VARIATIONS

The practice of taking classic recipes and dressing them up in avant-garde garb begs the question of boundaries. For instance, is a Kölsch still a true Kölsch if it is dry hopped with Citra, Cluster, or Columbus? Likewise, can you hop a hefeweizen with Mosaic? Clearly, there are no black-and-white answers, but such well-established IPA favorites as Simcoe, Amarillo, Tomahawk, and Warrior are considered much too aromatic and pungent to serve a "session" purpose, especially in lagers of Central European origin.

The following recent hop varieties, on the other hand, might be worth considering for their session potential in the four beers presented here, as well as in styles such as Belgian wit/bière blanche, kellerbier, or British pale ale.

- **Callista:** Released in 2016, Callista is a Hüll-bred aroma descendent of Hallertauer Tradition, which is itself a descendant of the classic Hallertauer Mittelfrüh. Callista has an alpha acid value of 2 to 5 percent and a total oil content of 1.4 to 2.1 ml/100 g, with aromas reminiscent of passionfruit, grapefruit, pine, and peach.
- **Ariana:** Another "sessionable" 2016 Hüll release, Ariana has 10 to 13 percent alpha acids and 1.5 to 2.4 ml/100 g of total oils. Ariana aromas evoke grapefruit, blackcurrant, geranium, gooseberry, citrus, and vanilla.
- **Loral HBC 291:** This 2016 Pacific Northwest release is a "super noble" variety with 10 to 12 percent alpha acids and 1.5 to 2.5 ml/100 g of total oil. Genetic ancestors of Loral include Glacier, Nugget, and the rare Tardif de Bourgogne from eastern France. This hop has fruity-floral, citrus, and earthy-herbal notes.

Also of interest are three recent Australian varieties:

- **Ella** (released in 2007) has subtle floral and spicy notes combined with anise and tropical fruit (13.3 to 16.3 percent alpha acids; 2.4 to 3.4 ml/100 g total oil).
- **Vic Secret** (2013) provides a clean, distinct fruit and pine character (14 to 17 percent alpha acids, 2.2 to 2.8 ml/100 g total oil).
- **Enigma** (2015) imparts notes of pinot gris, raspberries, and red currants (13.5 to 16.5 percent alpha acids; 2.4 to 3 ml/100 g total oil).

Especially in the hop arena, it seems, we can expect many more varieties to come down the pike in the next few years. Thus, keep your eyes and minds open, your brewing vessels humming, and remember: the 21st century has only just begun!

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intense and complex caramel flavors, and a smooth aromatic finish, as well as a deep copper-to-chestnut color with a slightly reddish hue. The recipe also calls for a tiny amount of Special W® (only 3 percent), which contributes strong notes of caramel, raisin, and bread crust; as well as a smidgen of deep-colored Carafoam® Special I (1 percent), which is de-husked prior to malting to eliminate much of the phenolic astringency of conventional roasted malts.

This modern interpretation of dunkel is slightly more robust than its predecessors of about 150 years ago, and thus needs a hop combination that can stand up and be counted—but without overpowering the brew. Therefore, the spicy-fruity-floral

Bavarian Saphir (released in 2002), which is generally considered an aroma hop, was selected for its smooth bitterness. Depending on the harvest year, Saphir tends to have alpha values of only 2 to 4.5 percent, but ours had a fortuitous 8.5 percent. For a late-kettle flavor addition, the Alsatian variety Barbe Rouge (released in 2015) contributes notes of red fruit, strawberry, and citrus, as well as a strong linalool-derived hoppiness. Finally, the soft, fruity complexity of Bavarian Hüll Melon (released in 2012), which evokes honeydew melons and fresh strawberries, pairs well with the malty caramel notes in the lingering aromatic finish. Think of this session lager as a fruit-filled, beery praline!

## SCHWARZBIER

Schwarzbier (German for black beer) is very similar to dunkel, but is more opaque—comparable to a London porter. Some versions may have a faint hint of roastiness in the finish. The finest versions have a dark mahogany color with a reddish hue. Most German schwarzbiers are brewed in Thuringia and Bavaria, with the Thuringian versions slightly roastier and drier than the Bavarian ones. The grain bill proposed here is more Bavarian than Thuringian in nature. For color, it contains 4 percent de-husked Carafoam Special I, compared to the dunkel recipe's use of only 1 percent of this malt. Additional depth of color comes from Munich I and Munich II malts, amounting to 34 and 10 percent of the grain bill, respectively. Munich malts, though deep amber, are still rich in enzymes and thus count as base malts. Finally, the grain bill contains 10 percent Carafoam®, which gives the brew extra body and improved head retention.

In a schwarzbier, hop bitterness and hop aromas are subordinate to the brew's malt character. For the beer's 24 IBU, therefore, the mild fruity-spicy-minty Bavarian Polaris (released in 2012), with its complex notes of citrus and earthy tea as well as plenty of linalool-derived hoppiness, seems a good bittering choice, while the linalool-rich Alsatian Aramis (released in 2002) as a late-kettle flavor hop supports the beer's maltiness. The citrus-like Mandarina Bavaria (released in 2012) adds a fruity complexity to the malt-dominant finish.

## MÄRZEN

Bavarian Märzen beers (aka Oktoberfestbiers) are mildly hopped and very malty. Though bona fide session lagers, they are moderately strong and full-bodied. In color, they vary from deep golden to amber to copper. Märzens are always matured during a long lagering period at temperatures near the freezing point. This is why they contain next to no fermentation byproducts such as esters, phenolics, or diacetyl. On the palate, these brews are rich and complex, with a lingering, malt-accented finish. They are elegant, soft, and surprisingly drinkable.

März or Märzen is German for March, the month when Bavarian brewers traditionally made these beers—at least until the invention of mechanical refrigeration in the mid-1800s. Because of the summer brewing prohibition between April 23 and September 29 (see the section on Dunkel), brewers created large beer inventories in late spring, which they stored in ice-filled caves or cellars for the summer. Such Märzen beers had to be stronger

## BAVARIAN SESSION LAGER RECIPES

### Brew Dates

September 27–30, 2016

### Brewers

Dominik Maldoner (*Weyermann staff brewmaster*)

Horst Dornbusch

John Lenzini (*Schilling Beer Co., Littleton, N.H.*)

Deborah Wood (*BSG Canada Ltd., Montreal*)

### Process (for all four brews - pages 114-116)

All specifications, weights, and measures are for a nominal brewhouse extract efficiency of 75 percent. The pH values were achieved with Bamberg water of pH 6.8. The total brewhouse time for each brew is about six hours.

In times gone by, of course, all Bavarian beers were decocted, while today, with modern malts, most breweries use the time-, energy-, and labor-saving infusion technique. Therefore, the recipes here call for multi-step infusions, leaving one decoction before the mash-out as an option.

1. Dough in thick at 113° F (45° C); rest 5 min.
2. Raise mash temperature to 149° F (65° C); rest 45 min.
3. Raise temp to 162° F (72° C); rest 20 min.
4. Raise temp to 172° F (78° C) for mash-out. If decoction is used for this step, boil a partial mash for 3 min and reintroduce it to the main mash.
5. Lauter.
6. Boil the wort for 75 min.
7. Add bittering hop 15 min into the boil.
8. Add flavor hop 60 min into the boil.
9. Add aroma hop 65 min into the boil.
10. Shut down and whirlpool.
11. Heat-exchange to the low end of the selected yeast's temperature tolerance.

### Fermentation (for all four brews - pages 114-116)

1. All four brews in this test series were fermented with Fermentis® Saflager W 34/70, a clean-fermenting lager yeast strain that adds mild floral and fruity aromas to the beer and ensures easy drinkability.
2. Primary fermentation at about 54° F (12° C) or slightly lower for about seven to nine days.
3. At the end of primary fermentation, allow the temperature to rise to roughly 64° F (18° C) for a two-day diacetyl rest.
4. Rack the brew off debris and lager/mature for about four weeks as close to the freezing temperature as the cellar equipment allows.
5. Filter before packaging or serving and adjust the carbonation to 2.3 to 2.7 vol. (4.6 to 5.4 g/l).

## DUNKEL

### Specifications

OG: 13.4° P (1.054)  
 FG: 3.5° P (1.014)  
 Color: 22.8 SRM (44.9 EBC)  
 IBU: 24  
 ABV: 5.1  
 pH: 5.3

### Ingredients

**Total Grain:** 47.16 lb/bbl (18.23 kg/hl)  
 Weyermann® Barke® Munich: 52%  
 Weyermann® Barke® Pilsner: 34%  
 Weyermann® CaraMunich® I: 10%  
 Weyermann® Special W®: 3%  
 Weyermann® Carafa® Special I: 1%

### Bittering hop:

2.6 oz/bbl (62 g/hl) Saphir (8% AA)

### Flavor hop:

3.1 oz/bbl (76 g/hl) Barbe Rouge  
 (T90; 6.6% AA)

### Aroma hop:

2 oz/bbl (47 g/hl) Hüll Melon (8% AA)

### Brewers' Notes

This dunkel has an appealing deep chestnut color and a strong, malty bouquet with hints of mild roast and bread crust. The Special W contributes to the beer's solid mouthfeel. The finish has lingering notes of nuts and dark malt.

than regular session beers so they would keep well. However, they were not quite as strong as bock beers, Bavaria's winter sipping lagers.

The first brewery to release a beer under the name Märzen was the Spaten Brewery of Munich in 1841. Making early use of new malting technologies that produced paler malts than the traditional direct-fired kilns, the mid-19th century Märzen was amber compared to the contemporary dunkel. In 1872, the Spaten Brewery introduced a version of its Märzen at that year's Oktoberfest, which is how the brew acquired its second name of Oktoberfestbier. In today's Märzens, the base malt tends to be Pilsner (59 percent of the grain bill in the recipe here), plus a substantial amount of Munich (20 percent Munich I and 7 percent Munich II in the recipe). The malt-aromatic Carahell® accounts for another 7 percent of the grain bill to give the beer additional depth of color and a fuller body. Melanoidin malt makes up the final 7 percent for improved flavor stability, a reddish hue, and subtle notes of honey and biscuit.

## SCHWARZBIER

### Specifications

OG: 12.25° P (1.049)  
 FG: 3° P (1.012)  
 Color: 25 SRM (49.3 EBC)  
 IBU: 24  
 ABV: 4.9  
 pH: 5.4

### Ingredients

**Total Grain:** 44.31 lb/bbl (17.13 kg/hl)  
 Weyermann® Pilsner: 42%  
 Weyermann® Munich I: 34%  
 Weyermann® Munich II: 10%  
 Weyermann® Carafoam®: 10%  
 Weyermann® Carafa® Special I: 4%

### Bittering hop:

1.7 oz/bbl (41 g/hl) Polaris (20.5% AA)

### Flavor hop:

0.37 oz/bbl (9 g/hl) Aramis  
 (T90; 5.9% AA)

### Aroma hop:

0.19 oz/bbl (4.5 g/hl) Mandarina Bavaria  
 (8.5% AA)

### Brewers' Notes

The color is deep ebony and opaque. The aroma has delicate hints of coffee, roast, tobacco, and fresh straw. On the palate, the beer's flavors evolve from complex dark chocolate and roast up front to a touch of citrus with some residual malty sweetness in the finish. If you like cigars, this would be a good companion.

The key to hopping this malt-aromatic beer is the selection of aromatic varieties that are strong but not aggressive. The high-alpha variety Polaris with 14 to 18 percent alpha acids and an unusually high total oil content of 4.4 to 4.8 ml/100 g, therefore, is an excellent bittering choice. It is supported by faint notes of white wine and green fruit from Hallertauer Blanc as a late-kettle hop. A complex blend of aroma hops composed of the honeydew-like Hüll Melon and mildly citrus Mandarina Bavaria, as well as tropical-fruit Mistral and red-fruit Barbe Rouge, both from Alsace, extend the brew's mild hoppiness as a counterpoint to its dominant caramel maltiness into the finish.

## HELLES

The straw-blond helles is the palest all-malt beer in the world, rivaled perhaps only by Kölsch. If a brewer wishes to make a paler beer than a helles, rice adjuncts must be used in the mash.

## MÄRZEN

### Specifications

OG: 14° P (1.056)  
 FG: 3.5° P (1.015)  
 Color: 9.4 SRM (18.5 EBC)  
 IBU: 23  
 ABV: 5.26  
 pH: 5.4

### Ingredients

**Total Grain:** 51 lb/bbl (19.7 kg/hl)  
 Weyermann® Pilsner: 59%  
 Weyermann® Munich I: 20%  
 Weyermann® Munich II: 7%  
 Weyermann® CaraHell®: 7%  
 Weyermann® Melanoidin: 7%

### Bittering hop:

1.3 oz/bbl (31 g/hl) Polaris (20.5% AA)

### Flavor hop:

0.4 oz/bbl (11 g/hl) Hallertauer Blanc  
 (10.5% AA)

### Aroma hop:

Mixture of four hops of 0.66 oz/bbl (16 g/hl) each, consisting of:  
 Hüll Melon (8% AA)  
 Mandarina Bavaria (8.5% AA)  
 Mistral (5.4% AA)  
 Barbe Rouge (6.6% AA)

The combined mixture weighs 2.6 oz/bbl (63 g/hl) and has an average AA of 7.1%.

### Brewers' Notes

The amber color of this Märzen is spot on. The complex selection of finishing hops gives it a fresh and fruity aroma, and the rich, caramel-malty flavor reverberates in the beer's long finish.

The first helles, introduced by the Spaten Brewery in 1894 under the label of "Helles Lager Bier," was the Munich brewery's answer to the golden-yellow Bohemian Pilsner, which, in the second half of the 19th century, made inroads into virtually every metropolitan beer market in Europe, including that of the erstwhile dunkel-dominated market of Munich.

A helles recipe is about as simple as it gets, but its brewing process is exact and the ingredients must be of the highest quality. It has a subtle maltiness up front, a clean maltiness in the middle, and a noble and delicate hop accent in the finish.

To accentuate the brew's maltiness, the Pilsner malt chosen here is based on the aromatic Barke barley variety (some three-quarters of the grain bill) combined with a good portion (18 percent) of slightly

under-modified, floor-malted Bohemian Pilsner malt. The small remaining portion of the helles grain bill is made up of 3 percent Carafoam and 3 percent Carahell, both for extra body and mouthfeel, as well as 1 percent pH-reducing acidulated malt for extra flavor stability.

The two base malts harken back to the 19th century. The modern Bohemian floor malt used here has deep heirloom roots in the Czech-Moravian-grown Haná agro-ecotype landrace, which was used in the first mash of the first Pilsner, in 1842. Subsequently, Haná supplied the genetic

foundation of just about any decent lager malt in the world. The modern Barke, too, has deep genetic roots in Haná. It was released in 1996, but abandoned a decade later for agronomic reasons. Since then, however, it has been revived and trademarked jointly by its Bavarian breeder, Josef Breun GmbH, and the Weyermann® Malting Company. Barke malt contributes substantial body, a rich, deep aroma, and a creamy head with good foam stability to the finished beer.

The traditional hops in this classic Bavarian beer garden quaff are, of course, traditional, low-alpha, noble varieties for a

bittering value of roughly 20 IBU. As an interesting variation on the classic helles hop theme, the bittering variety selected here is the Alsatian Triskel (released in 2006), which has an unusually high amount of the “noble” linalool (about 13 ml/100 g). The slightly fruity Alsatian Mistral (released in 2009) serves as an unobtrusive but supportive late-kettle flavor hop, while the lemony and mildly blackcurrant aromas of the classic Alsatian Strisselspalt—as a break from the 21st-century-only hop selections—give our helles a refreshing twist in the finish.

Horst Dornbusch is a brewer, author, speaker, judge, and consultant in the international brewing industry. The author wishes to thank three companies for their cheerful cooperation in this series of session beer brewing experiments: Weyermann Specialty Malts, Comptoir Agricole in Hochfelden, Alsace, and SAHM GmbH & Co. KG of Höhr-Grenzhausen, Germany. **NB**

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## HELLES

### Specifications

OG: 11.75° P (1.047)

FG: 2.75° P (1.011)

Color: 2.9 SRM (5.7 EBC)

IBU: 20

ABV: 4.8

pH: 5.5

### Ingredients

Total Grain: 42.42 lb/bbl (16.4 kg/hl)

Weyermann® Barke Pilsner: 75%

Weyermann® Floor-Malted Bohemian Pilsner: 18%

Weyermann® Carahell®: 3%

Weyermann® Carafoam®: 3%

Weyermann® Acidulated: 1%

### Bittering hop:

6.2 oz/bbl (149 g/hl) Triskel (T90; 3.3% AA)

### Flavor hop:

2 oz/bbl (49 g/hl) Mistral (T90; 5.4% AA)

### Aroma hop:

3.8 oz/bbl (91 g/hl) Strisselspalt (3% AA)

### Brewers' Notes

The pale grain bill gives this helles the required straw-blond color. The flavor is a mix of restrained, slightly spicy hoppiness and mild caramel maltiness, while the finish reveals the aromatic characteristics of the noble Alsatian hops.