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# WHAISKY

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**Adventures  
in distilling**  
Alternative grains



## The **Macallan** essence

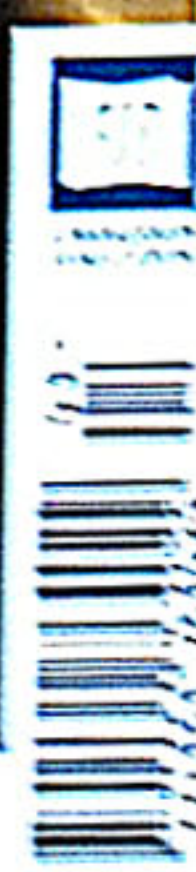
Annie Leibovitz captures the moment

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# The adventurous distiller

As the American craft movement gathers pace, we look at some of the alternative grains it is using

**W**hile the Scotch whisky industry continues to use malted barley, other distillers across the globe are finding themselves less beholden to the traditional grain and are branching out; with some stunning results.

Whisky Magazine asked Corsair distiller Derek Bell, author of *Alt Whiskies* and all round experimenter in alternative grains, to give us his take on what is out there and what makes a decent spirit; Gavin D. Smith also looks at what is happening with corn and rye. Elsewhere we report from both sides of the barley debate, with Neil Ridley talking to Diageo's grain buyer and Neil Wilson speaking to a barley farmer.



Previous page: The still house at Corsair  
This page: Checking the fermenter at Corsair Distillery



## Millet

Millet is a small seeded cereal species grown all over the world for food. It grows well in difficult environments and is extremely resistant to drought, making this an excellent survival food if a main crop failed. In my native Tennessee, there is an oral history of moonshiners using millet when the corn crop was lost. Millet was usually planted by hunters to attract waterfowl, but it also was appreciated for its hardiness and flavour. Many of these old timers believed this was a superior moonshine, smoother than corn. It can be difficult to work with, which may explain why it has never been commercially used in distilled spirits production in North America. Millets are traditionally important grains used in brewing millet beer in some cultures, for instance in many African cultures. Millet is an easiest grains to source and is quite inexpensive, but one of the most frustrating to mill, due to its small size. It could only be found unmalted until recently, the Colorado Malting Company, a micromalting company, has started making and selling malted millet for local breweries.

# WHY ALT GRAINS?

DAREK BELL

Currently the vast majority of whisky (and beer) is made with four grains: barley, wheat, rye and corn. There are other interesting grains, some old, even ancient, and some new grains that distillers should consider if they want to expand whisky's horizons. This may be for reasons of taste, practicality, cost, or even for sustainable reasons. When

creating a new whisky recipe, or modifying an old one, these grains give more options to the distiller in terms of the final spirit. Some grains have been used in alcoholic beverage production in other cultures, like buckwheat, millet, and job's tears, but not commercially in western culture. Let's look at a couple of potential alt grains in detail.



## Oats

Oats were the predominant brewing cereal in the middle ages, but have now lost their significance. Oats have a long history in brewing beer, yet are virtually nonexistent in the history of distilling for whisky. Why? Whisky is distilled beer. To a distiller, beer is simply whisky that has not reached its true potential. The better the beer, the better the whisky right? Oats have high protein, lipids, fats, and gums that change the mouthfeel of the whisky and add a pleasant oatmeal like sweetness, though it is much more subtle than the mash. Oats are also extremely economical and readily available. When distilling, we never know what is going to come over, and what is not, in distillation. We were surprised when some of the creamy body came across in the distillate just like an oatmeal stout beer.



## Milo

**Sorghum, often called Milo, is a type of grass that produces both a sap that can be made into a sweet syrup, and a grain. It is the only plant I know of with the potential to make both a rum, from the sap, and a whisky, from the grain. It has been studied as a potentially important crop for fuel ethanol. This grain tends to be cheap, easy to source, and fairly easy to work with. When malted it has a much lower diastatic power than barley, so it needs to get its enzymes from somewhere else.**



## Quinoa

Quinoa is a grain from the Andean region of South America grown. It was first cultivated there about 7000 years ago. Historically it was used to make chicha, an undistilled, fermented beverage with a low alcohol content. Quinoa is actually is more closely related to beets and spinach than other cereal grains. Quinoa adds an earthy and nutty flavor to whisky. Quinoa can be bought as either red, black, or white seeds. The red and black have more character, but are harder to source. It can more easily than other alt grains be found malted, as it germinates easily and quickly. Like corn, it requires a cereal mash, or boil step, making for a longer mash day.

Of the alternative grain whiskies we have made at Corsair, this one generates the best feedback in terms of taste.



## Spelt

Spelt is an ancient relative of modern wheat that has been grown since the bronze age. It has a nutty flavour that has seen its revival amongst health food advocates and has dramatically increased in popularity in the past two decades. When malted, it is similar to wheat in terms of ability to convert starches to sugar. It has less gluten than wheat and less viscosity.

It's taste in whisky is similar to wheat with more of an earthy, toasted bread smell.



## Buckwheat

Buckwheat has been used in several craft beers and some Japanese shochu, but not in whisky making. This is a shame because it adds a great nutty flavor that is quite distinctive. The taste is somewhat similar to pistachios when roasted. Buckwheat can be malted easily, but has significantly lower enzymes for starch conversion than barley, usually less than a third. Buckwheat is gluten free, and thus important for people who are gluten intolerant.



## Triticale

Triticale is a new grain variety created by crossing certain species of wheat and rye to create a grain with the hardiness of rye and the yields of wheat. Malted

triticale is similar to malted rye and has been identified as a grain with great promise for the brewing and distilling industry. Unmalted triticale has high diastatic power and a very low gelatinisation temperature. Triticale can mash without prior boiling. In terms of taste, it does have the spicy character of rye but is less pronounced. This is a fascinating grain with a lot of potential.



## Blue Corn

Blue corn is prized in making corn chips due to its superior taste. Bourbon made with blue corn instead of the standard flint corn has a richer, nuttier flavour profile. The spirit just has more character. Blue corn can be more difficult to brew as it is higher in oil and protein. It is always strange mashing it as the mash turns bright purple, sort of an eggplant colour. A Bourbon is by definition 51 per cent or more corn. When experimenting with this whisky style, this is typically a huge limitation in creating new recipes. Blue corn Bourbon makes for a different taste profile while still being true to Bourbon.

One grain I have not been able to get my hands on, but has a lot of potential for distillers is tritordeum. This very new grain

is a cross between wheat and barley and has one extremely exciting characteristic. It has a higher diastatic power, meaning the enzymes to convert starch, than barley. In fact it has the highest diastatic power of any cereal grain currently being considered for beer production. Why is this important? Well, let's say you wanted to make Bourbon with as much corn as possible to push the corn taste, but did not want to use artificial enzymes. You could use a lot less tritordeum than barley to convert the corn starches allowing you to push the amount of corn in the whisky's mash bill.

It can be difficult to source many of these grains, which explains why distillers have not embraced them. Finding them in malted format is even harder. Several micro malting companies have introduced malted versions of these grains. Rebel Malting in Nevada offers malted millet, emmer wheat, and buckwheat. Valley Malt has a smoked triticale, and the Colorado Malting Company makes malted millet, teff, quinoa, and buckwheat.

## Grainarchy

Alt grains work best in concert, rather than alone in my experience. Corsair recently had the honour of winning the top award at the American Distilling Institute's competition with "Grainiac," a nine grain Bourbon. This Bourbon pulled together many previous experiments with grains resulting in a very complicated Bourbon using corn, rye, wheat, barley, buckwheat, triticale, spelt, oats, and quinoa. This is where I think alt grains work best, in complementing each other. Just as master blenders add small amounts of different whiskies to add different notes of flavour, by using grains in small amounts the sum was greater than the parts. It benefited from the mouthfeel of the buckwheat and oats, and the nutty and earthy character of the quinoa, spelt, and triticale.

## Alternative types of barley, wheat, and rye

Beyond exotic grains like quinoa and buckwheat, there are versions of the standard malts most distillers never use. If you look at the types of malted barley most brewers use when making a new beer, they have over 70 different types of malt at their disposal. Most distillers however, just use plain 2-row barley. This is a shame as there are some great malts which can really add a lot to a whisky. Chocolate malt adds a rich coffee like cocoa flavour. Caramel 120 add some great roasted caramel flavour with hints of burnt sugar and raisins. Caramel 60 adds toffee flavours which pair nicely with the char of the barrel. Unmalted, roasted barley adds toasted, biscuit, and sourdough flavours to the whisky. Honey malt adds a sweet honey like smell. Chocolate wheat and chocolate rye also add strong toffee like and chocolate flavours. Distillers have typically not used these as they have a lower yield, but it does not take much of some of these malts to add extra flavour.

In writing the book, *Alt Whiskeys*, I was amazed at how little it took to make an alternative whisky, as whisky is very traditional, rigid and historically does not always have an open mind to new things. Certain types of whisky have their own strict rules, like Bourbon being 51 per cent or more corn. If whisky is going to keep attracting new drinkers and lure fans from other beverages, like beer and wine, using alternative grains or malts not typically used is a way to expand the horizons of whisky. New whiskies with new flavours and character will only be good for whisky making as a whole, and lead to new and innovative styles of whisky.