HOMEBREWING

INDIGENOUS BEVERAGES

OF THE

AMERICAN SOUTHWEST

Using readily available prickly pear and mesquite pods, you can fashion interesting modern brews with close ties to the ancient alcoholic drinks of the original Americans.

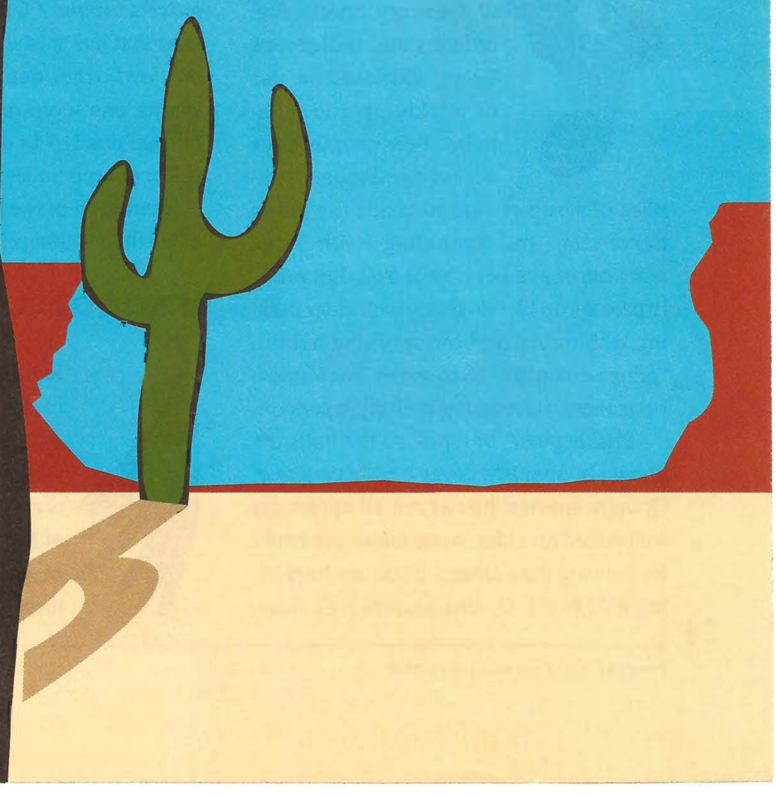
By Greg Sower

Living in the desert Southwest of the United States can be rough for a brewer. The unforgiving temperatures and lack of locally grown ingredients can be a challenge for someone who learned to brew in the moderate climate of the hop-and barley-blessed Northwest.

The idea of attempting to duplicate classic European lagers in the desert seemed as silly as searching for El Dorado, so I turned to *ethnozymurgy* to help quench my thirst for good brews. Ethnozymurgy is the study of how people of a particular culture and region make use of indigenous plants and specialized techniques with respect to fermentation. Not surprisingly, the historical and anthropological literature is filled with information describing alcoholic drinks made from a plethora of native plants. Adapting these historic recipes and ingredients to modern tastes, however, requires some slightly modified brewing techniques.

The biggest problem with using nonstandard ingredients is their inherent variability. Ingredients harvested from the wild do not have nutrition labels or malt analysis sheets, so successfully repeating recipes that use them can be difficult. Using homemade extracts significantly increases the reproducibility by creating a reliable base that can be measured and adjusted prior to brewing.

Two plants that I have found particularly well suited to my brewing tastes are mesquite (*Prosopis* spp) and prickly pear (*Opuntia* spp). Loaded with sugars and, when roasted, a complex spectrum of flavors that compares favorably to several specialty malts, mesquite is perfect for use in beers. Prickly pear, on the other hand, with its full berry and melon



flavors, helps create a delicious, crisp cider variation that refreshes throughout the hot summer months.

PRICKLY PEAR

The 1994 Special Issue of ***Zymurgy***, Special Ingredients and Indigenous Beers, addressed the use of prickly pear in colonche. Few people have access to adequate supplies of syrup or care to tackle the job of harvesting and preparing such large amounts of a rather hostile fruit. But prickly pear syrup blends nicely with cider making techniques and the resulting hybrid, "gringo-colonche" so to speak, has found a permanent place in my brewing repertoire.

Prickly pears, or *tunas*, as the fruits are known in Spanish, cover a wide variety of *Opuntia* species. Just as not all apples are well suited for cider, some *tun* as are better for brewing than others. If you are harvesting wild fruits, *O. streptacantha*, *O. ficus-indica* and *O. engelmannii* will be your best bets. Their colors range from deep purple to red to light green.

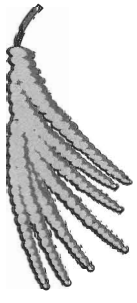
One caveat: *tunas* are very low in acid, thus long-term juice storage presents a problem. Boil your extract to create syrup or add sulfites to preserve the juice without excessive heating, which can change its color and flavor.

Syrups are widely available by mail order and a quick Internet search will turn up numerous options. You can also find them in Mexican grocery stores in many parts of the country.

To process harvested *tunas*, first remove the glochids (those pesky hairlike thorns that give the fruit its name) with a stiff brush or by passing the fruit over a flame. Then reduce the fruit to pulp with a potato masher or food processor. Strain the pulp through cheesecloth to collect the skins, seeds and remaining glochids. A quick boil will kill any wild yeast and bacteria as well as coagulate the larger pieces and any glochids that escaped the cheesecloth. Now add sulfites and refrigerate until you're ready to use.

Prickly pear juice contains sugar and will readily ferment, but this recipe calls for it to be added post fermentation as a flavoring. When you do this, it is important to prevent any further fermentation because it would result in overcarbonation or exploding bottles. So, with that said, to make gringo-colonche, simply add the prickly pear juice at a rate of 1:9 or 0.5 gallon of juice to 4.5 gallons (about 2 L to 18 L) of basic apple cider that has finished fermenting. (See sidebar for further details.) For commercial syrups, one seven-ounce (207-ml) bottle to five gallons (19 L) of cider will work. Add sulfite or keep under refrigeration to prevent fermentation of the prickly pear juice and allow the resulting elixir to clear.

MESQUITE



Fruiting about a month earlier than prickly pear, mesquite provided Southwestern Native Americans with a protein- and carbohydrate-packed food. A member of the plant family *Leguminosae* (think beans and peas), mesquite inhabits many of the

Sangre del Chupacabra

Ingredients for 5 U.S. gal (19 L)

- 4.5 gal (17 L) preservative-free apple juice (pasteurized is OK)
- 3.0 lb (1.36 kg) honey (mesquite is preferred for that Southwestern flavor)
- 0.5 gal (1.9 L) prickly pear extract or 7 oz. (207 ml) syrup
- 0.5 oz (14 g) yeast nutrient
- 4 tbsp (60 ml) acid blend
- 1 packet Wyeast No. 3068

- OG: 1.065

Brewer's Specifics

Boil the honey with two gallons (7.6 L) of apple juice for 20 minutes, then add the acid blend and yeast nutrient and pour into primary fermenter. Shake the fermenter to oxygenate. The primary fermentation will be longer and slower than that of beer, so rack to the secondary after two weeks. When fermentation has ceased and the cider has cleared (should be four to six months), rack to a keg, add sulfites and prickly pear juice, then place in a refrigerator. The cider should be ready in two weeks.

Because finished beverage contains unfermented sugars from the prickly pear juice, take care to prevent further fermentation.

ILLUSTRATIONS BY DAVE HARFORD

world's arid and semiarid regions including areas of Africa, the Americas, Australia and Asia as native or introduced species. In the Americas, the leafy green matter is used commercially as livestock forage. Peruvians make algarrobina, a syrup from the fruit that is used to sweeten baked goods. Mesquite has also been used as an instant coffee substitute.

Known as *algarroba* in South America and *kiawe* in Hawaii, mesquite is best known for the unique flavors it contributes to grilled meats. Much maligned by ranchers for its invasive growth on grazing lands and water scavenging capabilities, the sugar-packed fruits largely have been forgotten, or worse, erroneously dismissed as difficult to use. Mesquite can be difficult to mill because the pod must be separated from the extremely hard beans inside. With the proper technique, however, the mesquite freely yields all of its brewing potential. I developed my recipes using *P. velutina*, which is very similar in composition to *P. glandulosa*. These mesquites can be found throughout the Southwestern United States, but the techniques described here will work with any *Prosopis* species.

Mesquite's high sugar content allows a large quantity of melanoidins to be produced, resulting in coffee, nutty, vanilla and cinnamon flavors.

The mesquite tree fruits are long pods encapsulating very hard beans. The beans are not actually useful in brewing but the pods (pericarp) contain from 20 percent to 50 percent sugar by weight. They do not contain any starches, though there are small amounts of oligosaccharides. Because of this, mesquite may be thought of as a unique crystal malt, requiring no mashing to extract the sugars. Of note to those attempting to develop a gluten-free beer for those with Celiac disease, mesquite does not contain gluten.

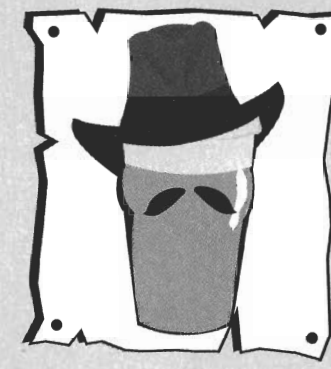
Mesquite pods are highly nutritious, containing 8 percent to 12 percent protein (comparable to barley) as well as calcium, iron, phosphorus and zinc, but they are low in tannins (1.2 percent). Native Americans ground mesquite pods into a fine flour and mixed it with water to form a thick gruel. Anthropological studies and historical literature comment on fermented beverages made from mesquite by Native Americans, though the techniques are either not reported or have apparently been lost.

In Argentina in the early 20th century it wasn't uncommon for people to make *aloja* or algarroba beer by fermenting the raw pods. However, because the pod's major saccharide is sucrose, which ferments less readily than glucose or fructose alone because of the required invertase enzyme, this brew would sour after several days of fermentation. The *Prosopis* species pods can be eaten raw, although roasting creates unique color and flavor profiles that can add a great deal of depth and complexity to a well-crafted homebrew.

Heating sugars such as sucrose allows them to combine with nitrogen through Maillard or browning reactions, thereby producing compounds called melanoidins, which contribute to color and flavor profiles. Mesquite's high sugar content allows a large quantity of melanoidins to be produced, resulting in coffee, nutty, vanilla and cinnamon flavors.

In the southwestern United States mesquite can produce pods in late June and again in mid-September. Harvest the pods when they are light tan and brittle. Pods with streaks of pink and purple supposedly contain more sugar, though this hasn't been scientifically proven. Avoid collecting

Prosopis Pale Ale



Ingredients for 5 U.S. gal (19 L)

8.0	lb (3.6 kg) two-row pale malt
1.0	lb (0.45 kg) 40L crystal malt
0.25	lb (113 g) biscuit malt
0.25	lb (113 g) wheat malt
0.5	gal (1.9 L) roasted mesquite extract
0.5	oz (14 g) whole Centennial hops, 10.5% AA (60 min)
0.5	oz (14 g) whole Cascade hops, 5.75% AA (30 min)
0.5	oz (14 g) whole Cascade hops, 5.75% AA (5 min)
1	packet/tube ale yeast

- OG: ~1.058 (dependent on extract)
- Bitterness: 35 IBU

Mash the grains at 149 to 152° F (65 to 67° C) for 60 minutes. Sparge to volume and add mesquite extract. Boil for 60 minutes adding hops as scheduled. Cool rapidly to below 80° F (27° C) and pitch yeast. I use White Labs California V liquid yeast. Allow to ferment. This beer is designed to allow the mesquite flavor reveal itself in a rather standard brew. Replace the specialty malts with more mesquite if desired.

ILLUSTRATIONS BY DAVE HARFORD

pods that have already fallen because they are likely home to brachid-beetles, whose presence is recognizable by a small hole in the pod. Place the pods in the sun, a food dryer or an oven set at 150° F (66° C) to completely dry them and eliminate any remaining insects. After drying, you can store the pods in a freezer indefinitely. If you lack access to mesquite trees, contact Promez in Tucson, AZ, (www.promez.com); they sell Peruvian *P. pallida*.

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Roast mesquite by placing rinsed pods on a cookie sheet in a shallow layer (less than 0.75 inch or 2 cm). Place the sheet into an oven preheated to 350° F. Check regularly to monitor the color change. Occasionally remove a pod to taste it for flavor and break it open to check the color. The process should take from 20 minutes for the lightest roast to more than an hour for the darkest. After roasting, let the pods sit for one to two weeks to allow the harsh aromatics to dissipate. Then cover and store as you would any other grain.

The *Prosopis* species varies considerably, so it is best to make an extract before you brew. This will allow you to adjust each batch to better reproduce your results. To make an extract, break the roasted pods into one-inch pieces and add to water in a 1:4 ratio (one pound of pods to two quarts of water) and heat to 150° F (66° C).

Lighter roasted pods will generally take longer to extract all the remaining sugar. Raw mesquite takes almost two hours before the specific gravity readings stabilize. Regular stirring will speed things up. For darker roasts, spoon out some of the extract and try it. When the flavor stops changing significantly, turn off the heat. Small amounts of pods (less than 0.25 lb or 100 g) can be ground in a blender and run through a drip coffee maker.

If you are brewing the same day, simply add the extract at the beginning of the boil. If you plan to store the extract, you can either boil it down to a more stable syrup or add sulfites and refrigerate.

Using homemade extracts as a technique to standardize the variability of either harvested or experimental ingredients greatly increases the chances of creating (and reproducing) a successful brew. Try using extracts on your next foray into historical or experimental brewing.

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