

## **Case Study: Tequila**



**Sarah Bowen**  
**North Carolina State University, United States**

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## Institutional context

### *National GI legislation*

In Mexico, geographical indications (GIs) are protected as “*denominaciones de origen*” (DOs). The *dénominación de origen* for tequila was the first granted in Mexico, officially published in the Federal Register in 1974. The legal definition of DOs in Mexico is based on that established in the Lisbon Agreement.

“*Denominación de origen*” is defined as “the name of a geographical region of the country which serves to designate a product originating therein, the quality and characteristics of which are due exclusively to the geographical environment, including natural and human factors” (Article 156 of the Industrial Property Law, cited in Rodríguez Cisneros 2001). Mexican GIs are property of the Mexican state. However, the Mexican Institute of Industrial Property (IMPI), which was primarily established to protect and regulate patents and trademarks, is the body responsible for authorizing their use (Rodríguez Cisneros 2001). The official norms that regulate production are defined by the federal government, in consultation with supply chain actors of the product in question. Mexican law requires that the quality, characteristics, production processes, and geographical origin of GIs be certified by an accredited organization (Monjarás Osario 2007). The organizations that monitor and certify compliance with production norms and quality standards—the regulatory councils (*consejos reguladores*) are private organizations<sup>1</sup>.

The first reference to made to “*denominaciones de origen*” is found in the Industrial Property Law of 1942, which introduced the concept. However, it was not until the law was reformed in January 1973 that the procedure for protection of GIs was introduced. The 1991 Law on Industrial Property Promotion and Protection, which was renamed the Industrial Property Law with modifications made in 1994, represents the legal framework in Mexico for the protection of GIs (Rodríguez Cisneros 2001).

Mexico currently has eleven protected GIs—five for spirits/liquors (*tequila* in 1977, *mezcal* in 1994, *bacanora* in 2000, *sotol* in 2002, and *charanda* in 2003), two for coffee (*café Veracruz* in 2000 and *café Chiapas* in 2003), two for craft products (*olinalá* in 1994 and *talavera* in 1995), one for fruit (*mango ataulfo del Sononusco de Chiapas* in 2003), and one for a semi-precious stone (*ambar de Chiapas* in 2000)<sup>2</sup>. Mexican GIs are fairly heterogeneous, although two categories, liquor and coffee, are clearly dominant in terms of market potential

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<sup>1</sup> The first of these regulatory councils, the Tequila Regulatory Council (CRT, according to its Spanish acronym), was created in 1994; however, in practice, many of the other 11 Mexican GIs still lack regulatory councils.

<sup>2</sup> Three other products—*tehuacan*, *café Pluma*, and *vainilla de Papantla*—were listed as having submitted applications for GI protection to the IMPI, but were not listed by the IMPI as having been approved. Their status is unclear.

and recognition. Interestingly, in Mexico, GIs can be awarded to non-consumable products (craft products and stones).

### ***Bilateral agreements and position in international debates over GI protection***

Mexico's position in international negotiations over GI protection is inconsistent. Mexico became a party of the Lisbon Agreement on September 25, 1966. Mexico's GI system is the oldest and best-developed in Latin American. However, at the same time, in WTO negotiations, Mexico was a party to the counter-argument put forward by the United States and its allies. The counter-argument, a response to the European's Union's June 2005 proposal for a multilateral system of registration and enforcement for all GIs (WTO 2005a), proposed a voluntary system, where notified GIs for wines and spirits would be registered in a database (WTO 2005b). Mexico's position is complicated because although it has significant economic stakes in protecting its GIs, particularly tequila, Mexico is also tightly tied to the political and economic interests of the United States, which of course is largely opposed to increased levels of protection for GIs.

Although tequila has been protected as a GI since 1974, it was only in the 1990s that the tequila GI began to be internationally recognized. In 1994, with the NAFTA agreement, the United States and Canada agreed to recognize the GIs for tequila and mezcal, in exchange for recognition of Tennessee whiskey, Bourbon whiskey, and Canadian whiskey, as "distinctive products" that can only be produced in their respective countries. In 1997, Mexico and the European Union signed a bilateral agreement in which the European Union agreed to recognize tequila and mezcal as exclusively Mexican products, in exchange for recognition of more than 250 European wines and spirits. These bilateral agreements have been significant in shifting production of tequila and agave almost exclusively to Mexico (previously, "tequila" was produced in countries such as Spain and South Africa, among others), and likely account for some of the impressive growth in tequila sales that has taken place over the last 15 years.

## Delimitation and characterization of the GI region



**Figure 1. Agave fields in Amatitán-Tequila valley (2006).**

The officially delimited GI region includes 181 municipalities in five states (all of the state of Jalisco, plus parts of Guanajuato, Michoacán, Nayarit, and Tamaulipas). The GI region is very large (11,194,600 hectares) and the definition of the GI boundaries has been a persistent point of conflict within the tequila industry. First, the GI region includes places without appropriate biophysical conditions or a cultural/historical tradition of cultivating agave. Second, the inclusion of Tamaulipas, on the eastern coast of Mexico, has been particularly controversial. As Figure 2 shows, the vast majority of the GI region is contiguous to the historic center of tequila production, the Amatitán-Tequila valley. However, the region also includes several municipalities in the state of Tamaulipas. When the GI for tequila was originally established in December 1974, it did not include the state of Tamaulipas; however, plantations of agave had been established in Tamaulipas in the late 1960s, and in 1977, the GI was modified to include several municipalities in Tamaulipas (Valenzuela 2003). It is widely agreed that the decision to include Tamaulipas was largely political<sup>3</sup>. In general, the size of the GI region and the political struggles inherent in the definition of its boundaries threaten the tequila industry's legal claim to GI protection, since Mexican GI legislation explicitly requires that "the delimitation of the territory of origin" be based on "geographical characteristics and divisions," not political motivations (Rodríguez Cisneros 2001, as discussed in Bowen 2008). Even within the originally delimited production area, there are considerable variations in geographical conditions (Leclert 2007).

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<sup>3</sup> One account states that wealthy agroindustrialists from the state lobbied to have Tamaulipas included in the GI region (Valenzuela 2003). Another account states that several large tequila companies from Jalisco encouraged planting of agave in Tamaulipas because they planned to build distilleries there for export to the US border, and then had to lobby the Mexican government to include these agave producers in the GI region (Bowen 2008). Leclert (2007) states that Francisco Javier Sauza, who had plantations in Tamaulipas and started the "La Gonzaleña distillery, convinced the influential politician Jose López Portillo to lobby for the inclusion.



**Figure 2. Area protected by the GI for tequila.**  
**Source: CRT 2008**

Although the GI region includes parts of five states, the bulk of tequila distilleries are located in the state of Jalisco, either in the Amatitán-Tequila valley, where tequila production originated, or in the highland region of Los Altos, in eastern Jalisco. The production of agave is more dispersed. As recently as ten years ago, the vast majority of agave production was still concentrated in the traditional regions of Tequila and Los Altos (Macías 2001); however, in recent years, agave production has rapidly moved into new areas. This is largely due to the agave shortage that occurred between 2000 and 2003. To give an idea of how quickly this change has proceeded, in 2006, the state of Jalisco accounted for only 80% of total agave cultivation in 2006, compared to 97% in 2000 (SAGARPA 2006a, 2006b, 2006c, 2006d, 2006e).

The small and medium-sized tequila companies still tend to buy most of their agave from the region in which their distillery is located, although they, too, began buying agave from distant sources during the shortage (Bowen 2008). The larger tequila companies, on the other hand, purposively source their agave from across the entire GI region, in order to minimize risk (Ibid.). Overall, although the growing conditions in some of these emergent areas of agave production are technically appropriate for agave cultivation, the smallholders' lack of knowledge about cultivation techniques, combined with the lack of training opportunities in these regions and the tequila companies' input-intensive production strategies, combine to undermine the connection to *terroir*, the quality of the agave, and the local environment. When agave from a number of very distinct places is blended together to produce tequila, it becomes impossible for consumers to identify or taste the specificity associated with a particular region's *terroir*.

## Local cultural and ecological resources and context

### *Cultural resources and savoir-faire*

Production of “agave liquor” originated in the Amatitán-Tequila valley in the mid-1500s, but agave has grown in the valley (and throughout many parts of Mexico) for 10,000 years, and the domestication of agave for human use began 3,500 years ago (Gómez Arriola 2004). Indigenous populations used agave for food, textiles, and fermented alcoholic drinks (Ibid.). The Spanish conquistadores who invaded Jalisco in the early 16<sup>th</sup> century did not like the original fermented agave drinks, and began experimenting with new grains, seeds, and plants in order to make wine from New World plants. In the late 16<sup>th</sup> century, the first copper stills were introduced to Jalisco, and the techniques used to produce rum (from sugar cane) adapted to the production of “mezcal wine” (Ibid.). Modern-day tequila is thus a fusion of European and American cultures; while the agave cultivation and harvesting processes were linked to ancient indigenous practices, the liquor production process was more rooted in European traditions and knowledge (Ibid.). The first documented reference to the production of mezcal wine, essentially modern-day tequila, in Jalisco dates from 1608 (Murià 1996). The largest and most powerful tequila companies (Cuervo, Sauza, Herradura) were established by large hacienda owners in the 18<sup>th</sup> and 19<sup>th</sup> centuries (Limón 2000). Before the land reform that took place in Mexico between 1917 and 1940 (see Warman 2001), the tequila companies produced their own agave (Luna 1991). However, after the land redistribution, the tequila companies became dependent on the new *ejidatarios* for the supply of agave.

In 2006, the “agave landscape” of the Amatitán-Tequila valley, including blue agave plantations, current and former distilleries, and archaeological ruins, was awarded UNESCO World Heritage status. Also in 2006, plans to develop a “tequila trail<sup>4</sup>” which would recognize and promote the cultural significance of the tequila industry in the valley, were announced. However, at the same time, the changing production relations that have taken place in the agave-tequila industry pose a threat to the preservation of local farmer knowledge and the traditional tequila production practices.

First of all, as described by Bowen (2008), although the tequila production norms include very specific parameters for measuring the quality of the *final product* (i.e., maximum levels of ethanol and aldehyde, alcohol content, specific ingredients that can be added), the norms that regulate the tequila production *process* are surprisingly open. Certain broad categories are defined; for

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<sup>4</sup> In 2006, the Inter-American Development Bank announced a grant of \$1.5 million, funded through its Multilateral Investment Fund, to support the development of the “Tequila Trail” in Jalisco (IDB 2006). The Bank is quoted as saying that the Tequila Trail will highlight “the natural and cultural attractions of this region known not only for the world-famous Mexican liquor, but also for its traditional horsemen, the *charros*, as well as for its *marachi* music” (Ibid.). The Tequila Regulatory Council will be the executing agency of the project, with support from the Cuervo Foundation and other distillers in the region (Ibid.).

example, a “*reposado*” tequila must be aged for at least two months, while an “*añejo*” must be aged for a minimum of 12 months. However, other areas, including the way in which the agave is cooked, the method for mashing the agave, the agents used to ferment the agave juice, and the type of still, remain undefined. Therefore, the tequila production process is becoming more and more industrialized. For example, the agave is increasingly cooked in steel autoclave ovens, because they are faster and more efficient, even though many supply chain actors believe that cooking the agave in the traditional wood-burning ovens had a positive effect on the taste. This openness in the norms represents a fundamental weakness in the tequila GI. Because these traditional practices are not defined in the norms, it is up to each individual tequila company to decide which production processes they are going to use and where they want to potentially sacrifice taste and aromatic complexity for efficiency. As the market becomes more saturated and economies of scale become more important, tequila companies will face increasing pressure to harmonize production practices and reduce costs (Casas 2006), and traditional practices like the use of slow-cooking ovens are endangered.

Second, changes that have taken place in the industry threaten the maintenance of local farmer knowledge. In areas like the Amatitán-Tequila valley, traditional agave cultivation techniques, including intercropping the agave with corn or beans, pruning the leaves of the agave plant to control pests, application of animal-based fertilizers, and field rotation have been passed down from generation to generation (Valenzuela 1985, Villavazo 1986). However, given the increased use of contract arrangements, and as responsibility for agave production shifts from small farmers to the tequila companies, traditional agave cultivation techniques are being replaced with a more mechanized, chemically-intensive system of agave cultivation (Valenzuela 2005, Bowen and Valenzuela 2009). Strikingly, in interviews conducted with supply chain actors in 2006, almost no one mentioned the elimination of traditional cultivation practices and farmer knowledge as threatening the quality or authenticity of tequila (Bowen 2008)<sup>5</sup>. A few people referred to the unique cultural traditions that are part of the tequila industry; for example, a member of the National Chamber of the Tequila Industry explained that “one of the characteristics that defines the [GI] region—is the human tradition, the knowledge about how to produce (tequila)” (Ibid.). In practice, however, very little has been done to preserve local farmer knowledge or support the farm families that have depended on the tequila industry for generations.

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<sup>5</sup> A governmental official who had worked on the application for UNESCO World Heritage Status was one of the only people who spoke of the importance of preserving the culture of the *agaveros* and the traditional cultivation methods. He explained, “Tequila is not just a product, but also everything that comes underneath the product—the land, the tradition—it brings a very profound history, which does exist, but which, due to primarily commercial interests, has been expanded (beyond the traditional region of origin).”

## ***Ecological resources***

Although tequila supply chain actors express a belief in the notion of terroir, describing how differences in soil type, climate, and slope affected the size and sweetness of their agave, this link to terroir has not been maintained in practice (Bowen 2008). As mentioned above, the sheer size of the large tequila firms' agave basins, combined with the fact that they mix agave from many different regions when producing tequila, dissolves the biological link to *terroir*. The GI region includes areas that do not have appropriate soil or climatic conditions for growing agave, and the large tequila companies tend to base their buying decisions on price and transportation costs, and not on agroecological or taste characteristics (Ibid.).

One additional threat to the link between *terroir* and quality is the fact that the actors in the tequila supply chain have not considered the importance of protecting biodiversity in tequila's region of origin. Of the nine varieties of agave used in the production of tequila at the end of the 19<sup>th</sup> century (Pérez 1887), only one (*Agave tequila Weber*, also known as blue agave) is currently permitted by the official norms regulating tequila production. In this way, the GI for tequila has actually contributed to a reduction of biodiversity in tequila's region of origin. The blue agave variety was privileged over other varieties because of its high productivity and because it was easier to work with in the distilleries (Valenzuela 2005). However, no comprehensive tests were conducted to evaluate the different varieties of agave historically used to produce tequila according to criteria such as resistance to disease, sugar content, or taste characteristics (Ibid.). Moreover, the genetic homogeneity of the blue agave plant, cultivated in monoculture and propagated asexually, increases the region's susceptibility to a large-scale outbreak of disease or pest infestation (Valenzuela 2005, Larson 2007). The blue agave variety has difficulty resisting diseases caused by fungi and bacteria, which leads to massive infestations of pests and disease, as occurred in the 1990s.

## **The product and its market**

### ***History of qualification process***

The first official norm for tequila was established in 1949; it stated that tequila had to be made with 100% Weber blue agave (*Agave tequilana Weber*). As mentioned earlier, the official "*denominación de origen*," or GI, for tequila was established by the Mexican federal government in 1974. This makes tequila the oldest legally recognized GI outside of Europe. Mexican GI applications are submitted to the Mexican Institute for Industrial Property. Unlike regulations in many countries, Mexican law does not require that a *group* of actors submit the application for GI protection (Bowen and van der Meulen 2008). The original application for recognition of the GI for tequila was submitted (in 1973) by Tequila



Herradura, now the third largest tequila company, and the Regional Chamber of the Tequila Industry (Ibid.).

### ***Description of norms and regulations***

The GI for tequila, as established in 1974, stated that in order for a product to be marketed as “tequila,” it had to be made from at least that least 51% *Agave tequilana Weber*<sup>6</sup>, grown within the boundaries delimited by the federal government. The GI protects two basic types of tequila: tequila that is made from 100% blue agave, and tequila that is made from 51% blue agave alcohol and 49% alcohol from other sugars (generally sugar cane), known as *tequila mixto*. Tequila made from 100% blue agave, which is of higher quality and sells for a higher price, must by law be bottled within the GI region. However, *tequila mixto*, which comprises the bulk of tequila exports to the US, is often sold in bulk and bottled outside of Mexico, to save on transportation. In addition, the tequila norms define four age categories for agave: blanco/joven (aged less than two months), reposado (aged at least two months), añejo (aged at least one year), and extra añejo (aged at least three years). The official norm that governs the tequila production process is created by the federal government, in consultation with supply chain actors. In general, the norms that govern the industry have evolved in ways that benefit the tequila companies and foreign bottlers and distributors, while the contributions that the local environment, the *agaveros*, and the artisanal production process make to the quality of tequila have been largely ignored.

Although all Mexican GIs are property of the Mexican state, the agave-tequila supply chain is managed by the Tequila Regulatory Council (CRT), a private organization created in 1993. The primary functions of the CRT are to protect the GI for tequila in Mexico and internationally, and to verify and certify compliance with the norm for tequila production. The CRT’s directive council is comprised of four groups of actors: agave farmers, tequila producers, tequila bottlers and distributors, and governmental representatives. The CRT carries out quality control in the tequila industry, although Mexico’s Consumer Protection Agency (PROFECO) is responsible for sanctioning producers who do not comply with the norms. Overall, within the tequila industry and especially among the tequila distilleries, the CRT has a reputation as having played a key role in developing a “culture of quality” within the industry (Bowen 2008). By almost all accounts, the technical quality of tequila, measured according to scientific parameters and the absence of defects, has improved substantially since the creation of the CRT in 1993 (Ibid.). At the same time, the institutionalization of the CRT’s objectives within the industry has not come without conflicts, and there is a widespread perception among the smaller tequila companies and the agave

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<sup>6</sup> The minimum proportion of agave required to produce tequila has decreased over the last fifty years, from 100% blue agave in 1949 (when the first official norm for tequila was established), to 70% blue agave in 1964 and finally to 51% blue agave in 1970.

farmers that the CRT exists mainly to serve the large tequila companies and transnational liquor firms.

### ***Evolution of the norms for tequila production***

In general, the agave farmers' lack of power and representation vis-à-vis other supply chain actors means that, ever since the first official norm for tequila was established in 1949, the norms and quality control mechanisms adopted in the tequila industry have almost always favored the tequila companies, and as such, have been used to exclude the (small) agave farmers from the supply chain and to consolidate the economic and political power of the tequila companies (Bowen 2008). Furthermore, revisions made to the norms that regulate tequila production have predominantly gone in the direction of lowering quality standards and reducing costs (Ibid.).

Four key weaknesses in the norms that regulate tequila illustrate this loosening of standards (Bowen 2008, Leclert 2007): reductions in the minimum required proportion of blue agave sugars, the continued exportation of tequila in bulk, the recent inclusion of flavored tequilas, and recent controversies over the definition of "mature" agave. First, although the first official norm for tequila production (1949) required that tequila be made with 100% Weber blue agave, since then, however, during agave shortages, the tequila companies have successfully appealed to the Mexican government to change the norms regulating the production of tequila. Currently, the minimum proportion of agave sugars required to produce tequila is 51%. Second, although all 100% blue agave tequila must be bottled in Mexico, *tequila mixto* can be exported in bulk and bottled in other countries. This not only negatively affects economic development within the GI region, by reducing the number of jobs that stay within the region, it also negatively affects the quality of tequila being produced, since the Mexican government and the Tequila Regulatory Council have limited ability to monitor or regulate the foreign bottling companies. Third, the 2006 revisions to the norms allow for the production of flavored tequila (i.e., lemon-flavored tequila, mango-flavored tequila), in order to better compete with flavored vodkas and other specialty liquors. By allowing artificial flavors to be added to tequila, the new norm violates the primary premise of a GI—that it protect the integrity, quality, and more traditional methods used to produce an agricultural product. Finally, another controversy that emerged with the new norms concerns the fact that the norm no longer requires that the agave used to produce tequila be fully mature<sup>7</sup>. The 2006 norm simply requires that tequila be made from blue agave, and no longer stipulates that the agave be mature. Among the agave farmers, the leaders of the farmers' associations, and officials in the governmental agencies that work with the farmers (SEDER, SAGARPA), there is widespread

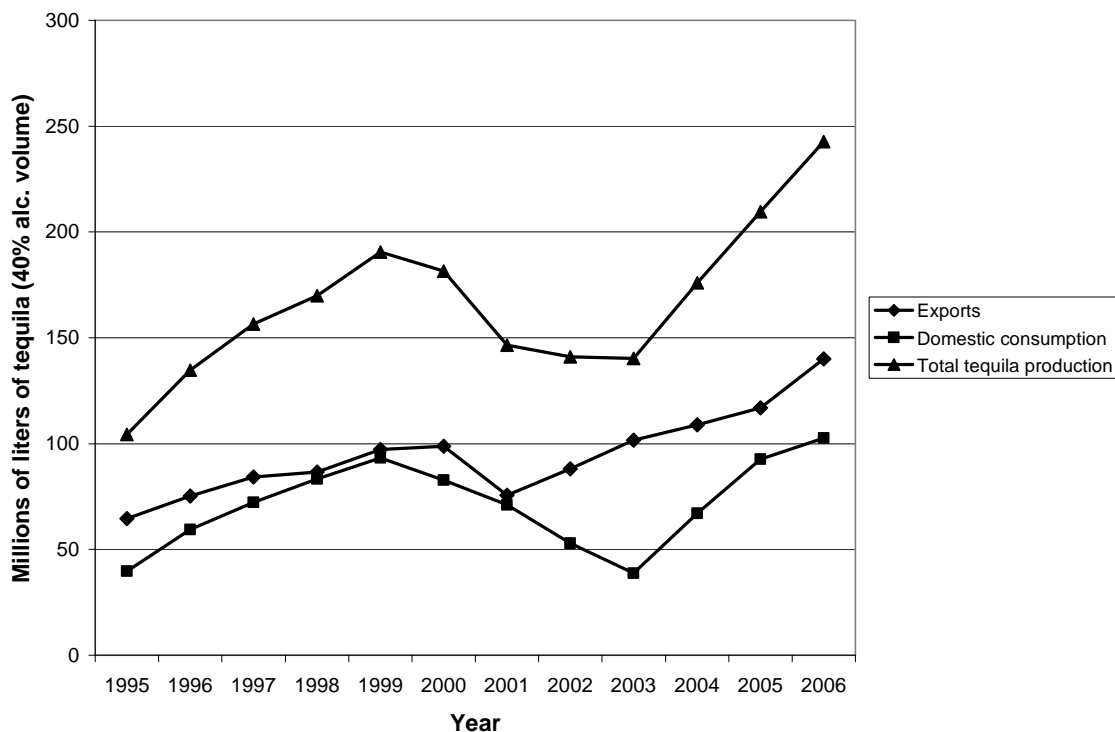
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<sup>7</sup> The 1994 norm for tequila production defined tequila as being derived from "the grinding of mature heads of agave" (NOM-006-SCFI-1994); the 2006 norm defines tequila as "derived from the heads of *Agave tequilana* Weber (NOM-006-SCFI-2005). The key difference between the 1994 and 2006 versions, and a major point of contention, is the removal of the word "mature."

consensus that this change was made primarily in order to allow the tequila companies to use their own immature agave, instead of forcing them to buy mature agave from the independent farmers if they did not have adequate supplies of their own. In conclusion, the tequila norms fail to protect the quality and authenticity of tequila; the norms do not define the quality of agave or seek to maintain the traditional practices that are central to the history of the industry and the specificity of the final product (Bowen 2008).

### Markets

Over the last 15 years, due to a number of reasons—including higher quality standards associated with the creation of the CRT; the international endorsement (by the United States and Canada in 1994 and by the European Union in 1997) of the tequila GI; and the expansion of high-end, niche-market tequilas—demand for tequila has significantly increased. As shown in Figure 3, total production of tequila increased from 104.3 million liters in 1995 to 242.6 million liters in 2006 (CNIT 2006).



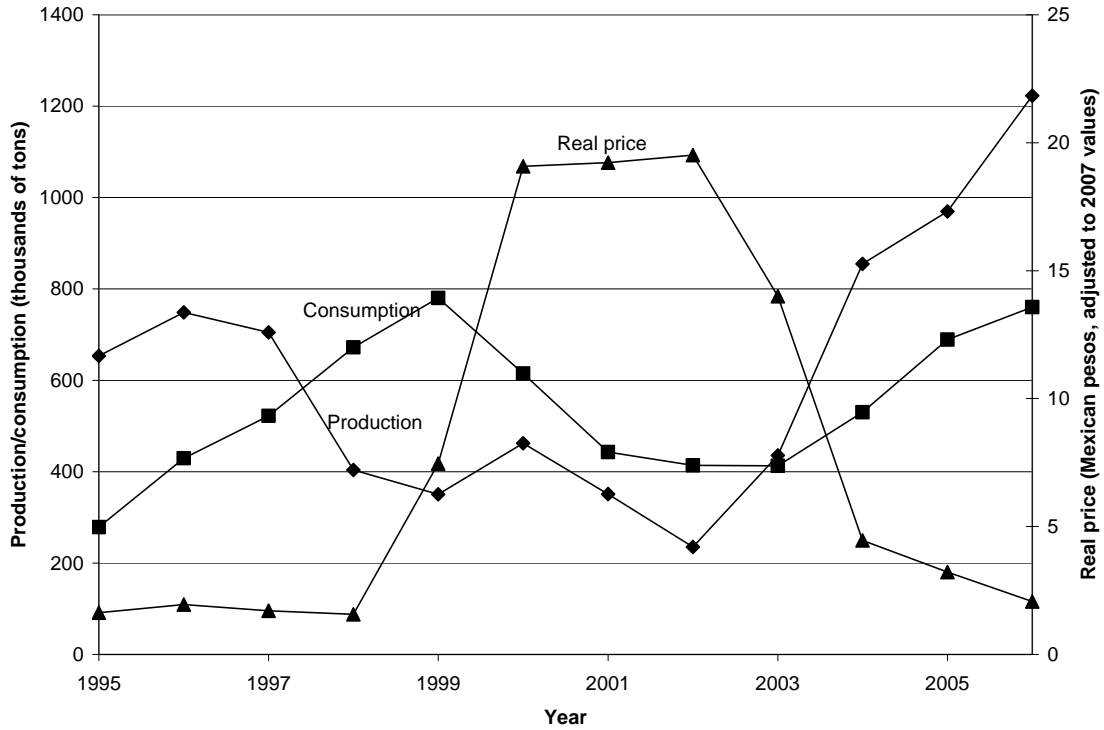
**Figure 3. Trends in tequila production, 1995-2006.**  
**Source: National Chamber of the Tequila Industry, 2006**

This growth in the market, however, has not been consistent (as shown in Figure 4), due to a severe agave shortage that occurred between 1999 and 2003. The tequila industry has been characterized by cycles of abundance and shortage of agave throughout its history, due to several reasons: the long cultivation cycle of

agave (six to ten years), bad relationships between the tequila companies and small farmers, and tequila companies' lack of planning and vision (González 2002). In mid-1999, after the abundance cycle of the mid-1990s (in which agave prices were so low that some producers chose to let their agave rot in the fields), the agave industry experienced a particularly devastating shortage. Due to a fungal infection that struck in the mid-1990s and an early winter frost in 1997, as well as to the cycles of surplus and shortage that normally accompany agave production, from 1997 to 2000 the blue agave population in Jalisco decreased by 50.7% (González 2002). With the shortage, the average price of agave skyrocketed, shooting from \$1.57 pesos per kilogram in 1998 to more than \$19.08 pesos per kilogram in 2000 (prices expressed in real 2007 terms, Macías and Valenzuela 2008). Farmers with existing agave plantations "became rich overnight," but many tequila companies were pushed out of business, because they could not afford to pay such high prices for the agave (Bowen and Valenzuela 2009). Production volumes did not begin to rebound until 2003. Now, the agave market has again entered a period of surplus. In 2006, 1.2 million tons of agave were harvested, but the tequila industry was only able to consume 769,000 tons of agave. Many producers were forced to let their agave rot in their field, and even for those lucky *agaveros* who were able to find a buyer for their agave, the price had dropped to \$2.07 pesos per kilogram (Macías and Valenzuela 2007), near or below the estimated costs of production<sup>8</sup>. The price dropped further in 2007, to \$1.70 pesos per kilogram (Ibid.), and the CRT estimates that the surplus will continue through at least 2009 (Bowen 2008). Overall, the cycles of surplus and shortage threaten the socioeconomic and ecological sustainability of the industry, and contribute to inequality and concentration among the agave farmers and the tequila companies (Bowen and Valenzuela 2009).

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<sup>8</sup> There is no clear consensus on how much it costs to produce a kilogram of agave. In 2005, a committee comprised of representatives from the CRT, the major associations of *agaveros*, and the federal government (SAGARPA, SEDER) estimated the average costs of agave (over the entire cultivation cycle) to be \$2.55 pesos per kilogram (Bowen 2008). A survey by SAGARPA, in 2006, and a study by Alejandro Macías Macías and Ana Valenzuela Zapata in 2007, estimated the costs of production more modestly, at \$1.05 pesos per kilogram, and \$1.49 pesos per kilogram, respectively.



**Figure 4. Cycles of surplus and shortage of agave, and associated changes in price.**

**Source: Macías and Valenzuela 2007**

**Actors and collective organization**

**Basic composition of the agave-tequila supply chain**



**Figure 5. Demonstration of agave jimador (harvester) outside tequila distillery (2006).**



**Figure 6. Tequila distillery and fermentation vats (2006).**



**Figure 7. Tequila barrels during aging process (2006).**

The tequila industry is comprised of three main groups: the agave farmers, the tequila distilleries, and the bottlers and distributors. The tequila companies increasingly rely on contract arrangements with the agave farmers to ensure their supply of agave, and some firms have started to rent the smallholders' land and grow the agave themselves. The National Chamber of the Tequila Industry (CNIT, according to its Spanish acronym) estimates that in 2006, 12,000 agave farmers, 11,200 day laborers, and 3,400 field workers (employed by tequila companies) were associated with the production of agave (CNIT 2006); however, this is likely a very rough estimate. Many of these farmers are very limited in their landholdings and economic resources. After the agave is harvested and delivered to the tequila distilleries, the heart of the agave plant is roasted and pressed to obtain the juices, which are fermented and distilled to produce tequila. 124 firms are currently registered to produce tequila (CRT 2008a, 2008b). The third group of actors, the tequila bottlers and distributors, is comprised of companies primarily in Mexico and in the United States, which accounted for 76% of tequila exports in 2006 (CNIT 2006).

Within the supply chain, the tequila firms exert considerable control over the agave farmers when negotiating issues such as the price of agave and the norms

that govern production. Moreover, the tequila market is highly concentrated, meaning that even when considering power dynamics among the tequila companies, a few key firms exercise disproportionate control. At the beginning of 2005, four firms (Cuervo, Sauza, Herradura, and Cazadores) controlled approximately 67% of the total tequila market (*El Financiero*, February 9, 2005). Furthermore, most of the major tequila companies are now controlled primarily by transnational liquor firms (e.g., Fortune Brands, Brown-Forman, Diageo). This means that international interests increasingly influence the politics and production norms of the tequila industry, despite its reputation as being uniquely representative of Mexican history and culture.

### ***Collective organization – the Tequila Regulatory Council (CRT)***

As mentioned above, the CRT, a private organization, was established in 1993 to govern the supply chain and assure compliance with the norms. The CRT is an interprofession that theoretically integrates all of the different groups that comprise the tequila supply chain. However, in practice, the agave farmers have been largely excluded from the CRT's objectives and organizational structure, and the CRT has done little to ensure the integration of the agave farmers into the supply chain or the preservation of traditional production methods and agricultural practices.

Inequality is reproduced within the organizational structure of the CRT in two primary ways. First, as described by Bowen (2008), a close examination of the CRT's organizational structure reveals a lack of representativity. The CRT is heavily influenced by the large tequila companies and the transnational liquor companies that own them. This presents an important barrier to the CRT's ability to make decisions for the collective good of the supply chain. The CRT is comprised of four sectors: (1) the tequila distilleries, (2) the agave producers, (3) the bottlers and retailers, and (4) a group of honorary representatives (primarily officials from relevant governmental agencies) (CRT 2008c). In terms of voting power, the tequila distilleries have a total of eight votes, the agave producers have a total of eight votes, and the bottlers and distributors have two votes. However, within each of the sectors<sup>9</sup> and the nine special committees<sup>10</sup> that

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<sup>9</sup> For example, within "Sector B," which represents the agave producers, for example, there are four groups (each of which has two representatives): large associations of agave farmers (more than 30 million plants), medium-sized associations (between 10 and 30 million plants), large private producers (more than 30 million plants), and small and medium-sized private producers (between 1 and 15 million plants). Small associations of agave farmers are not represented at all, and the large private producers are represented by Cuervo's and Herradura's agave production companies. "Sector C," the bottlers and retailers, has two representatives, one from Cuervo and one from Pedro Domecq, a subsidiary of the *transnational* liquor company Pernod Ricard. "Sector A," the tequila companies, does a little better—it includes four subgroups (for micro, small, medium, and large tequila companies), with two representatives for each subgroup. This is effective in insuring that tequila companies of different sizes are represented; however, it is interesting to note that only 2 of the 8 companies represented are from Los Altos (even though almost half of all tequila production takes place in Los Altos), and some of the representatives of smaller companies have ties to the largest firms (i.e., Don Julio, a medium-sized company, which

make up the CRT's directive council, the largest tequila companies are disproportionately represented. Including both the official voting representatives of the directive council and the presidents of the committees, out of the twenty-seven representatives (not including the honorary members, who are public officials), thirteen, or 48%, are associated with one of three companies: Cuervo, Sauza, or Herradura (Ibid.).

Second, to a lesser degree, inequality is reinforced in the CRT through the payment structure that funds its operations. The payment scheme disproportionately burdens small tequila companies and contributes to differentiation among the tequila companies. Most basically, the CRT's main source of income—a per volume tax (\$0.34 pesos per liter at 55% alcohol content) paid by the tequila companies (CRT 2008d)—is more difficult for the smaller tequila companies to absorb. In addition, tequila companies are required to pay a minimum fee of \$8,000 pesos per month, whether they are operating or not, and a one-time registration fee of \$20,000 pesos (Ibid.). This is not a problem for the large tequila companies, which operate year-round and produce several million liters of tequila per year, but can create difficulties for the smallest producers, who may only produce tequila for a few months out of the year. Some small distilleries choose to market their product as generic “agave liquor,” instead of registering it as “tequila” with the CRT, because the costs of registration are too great (Bowen 2008). In addition, some of the required laboratory tests are not covered by the CRT, which poses an additional challenge to small producers. Many large distilleries have their own laboratories on-site, but the smaller producers are forced to pay the CNIT, if they are members<sup>11</sup>, or another tequila company, for the required analyses (Leclert 2007). Overall, the payment system is structured in a way that places the biggest burden on the small producers instead of trying to use the collective organization of the GI to “level the playing field.”

In sum, the organizational structure of the CRT has an important effect on how decisions are made within the supply chain. The CRT lacks legitimacy, particularly among the agave farmers. Perceptions of the CRT as a biased, unfair organization contribute to distrust and alienation among marginalized actors (agave farmers and small tequila companies). The clear power that a few

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is 50% owned by Cuervo). The final group, “Sector D,” is comprised of representatives from relevant governmental associations, and does not have voting rights.

<sup>10</sup> The following committees are included: the certification committee, the verification committee, the committee on norms and regulations, the committee on external affairs, the finance committee, the committee on agronomic techniques, the committee of honor and justice, the committee for planning strategies, and the mixed committee for the defense of tequila (CRT 2008c). Unlike the four sectors, which are clearly defined in terms of membership, I could not find any information on how the presidents of the committees are selected. Six of the nine committee presidents are directly associated with one of the three largest tequila firms (Cuervo, Sauza, Herradura).

<sup>11</sup> The CNIT includes only the eighty largest tequila companies (out of the 124 companies in total) (Bowen 2008). Thus, the smallest distilleries do not have access to the CNIT's services.



select tequila companies exert within the CRT undermines the engagement of other supply chain actors and contributes to a heightened level of tension within the tequila industry. Furthermore, the CRT's lack of effectiveness has resulted in a lack of regulation of two key issues: the supply of agave (which is characterized by massive fluctuations and cycles of surplus and shortage), and the distribution of the value-added along the supply chain (which is disproportionately captured by the large tequila distilleries and multinational liquor companies).

### ***Role of the Mexican state***

Unlike many European countries (e.g., France, Italy), which are heavily involved in the management and/or regulation of their national GIs, Mexican GI policy is not very coherent or strictly enforced, which has affected the way that the tequila GI has developed. Mexico does not have a specific institution dedicated to GIs; GI protection is included in the jurisdiction of the Mexican Institute of Industrial Property (IMPI), which was primarily established to protect and regulate patents and trademarks. The Mexican government has not established any objectives for GI policy (i.e., rural development, environmental protection) beyond protecting Mexican products from foreign-produced imitations. Because the Mexican government is not heavily involved in the management of GIs, the tequila GI has been allowed to evolve in ways that undermine the quality and authenticity of tequila.

In the tequila case, the main effect of the lack of strong and effective GI legislation is that the Mexican state does not provide any support to marginalized supply chain actors (i.e., farmers, small producers). Furthermore, there is no formal structure in Mexico for ensuring that Mexican GIs maintain and protect product quality, producer livelihoods, and local environmental resources. Because the Mexican state has failed to establish a minimum standard of quality and authenticity for Mexican GIs, the reputation of the concept of GI in Mexico is threatened. The process of negotiating the norms that regulate GI labels remains hidden and dominated by powerful supply chain actors, and although the federal government technically writes the norms in consultation with supply chain actors, there is no formal means of guaranteeing that all stakeholders are represented within the negotiation process. In the case of tequila, the norms have always been revised in ways that have benefited the large tequila companies, at the exclusion of other actors.

### ***Influence of other outside actors***

Most importantly, as explained above, the multinational liquor companies that own many of the tequila distilleries exercise great influence over the governance of the CRT and the construction of the norms that regulate production. This means that local and/or national (Mexican) interests are not always privileged in the negotiations taking place within the industry.

In addition, because of the United States' proximity to Mexico and the importance of the American export market for the tequila industry, the United States government (and other interests in the United States) have an influence in the industry. This is most clearly exemplified by the industry's recent failure to pass a law banning the exportation of tequila in bulk. Although the continued exportation of bulk tequila negatively affects local economic development and degrades the quality of tequila, efforts to establish a rule requiring that all tequila be bottled in Mexico have failed repeatedly. In 2003, the Mexican government proposed that the norm for tequila be modified to require that all tequila be bottled in Mexico. The motivation for the modification was primarily rooted in concerns over regulation of quality in the United States. The federal government's proposal failed. In January 2006, the United States and Mexico signed an agreement in which Mexico dropped the proposed ban on exportation of bulk tequila, in exchange for increased transparency of the quality control process in the United States<sup>12</sup>. In interviews conducted in 2006, most supply chain actors framed the opposition as coming largely from American bottlers and distributors, who had already made significant investments in infrastructure in the United States (Bowen 2008). However, opposition also came from within Mexico, including the largest tequila companies, which are owned by transnational liquor companies and therefore not always concerned with the good of the region or of Mexico (Ibid.).

## **Analysis, synthesis, and recommendations**

### ***Socioeconomic, cultural, and ecological impacts***

Much of the impact assessment was compiled from Bowen and van der Meulen (2008), drawing heavily from Bowen (2008) and Bowen and Valenzuela (2009).

### **Economic impact**

Tequila is the product with the greatest impact on the gross domestic product of Jalisco, the state where the vast majority of agave and tequila are produced. The industry provides employment to about 35,000 people (CNIT 2006). The economic impact is concentrated in two regions of Jalisco: the Amatitán-Tequila valley in central Jalisco, and "Los Altos," in the highlands east of Guadalajara. The effect of the tequila industry on the rural economies of the regions is significant. In the municipalities that comprise these two primary tequila and agave production areas (Amatitán, El Arenal, and Tequila in the Amatitán-Tequila valley; and Arandas, Atotonilco, Jesus María, and Tepatitán de Morelos in Los Altos), the labor force employed in agriculture averages 26.0%, whereas for the

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<sup>12</sup> Under the new agreement, a registry for all tequila bottlers in the United States is created (Office of the United States Trade Representative 2006). In addition, before any shipment of bulk tequila is permitted to leave Mexico, a form detailing the amount of tequila being shipped, the bottling company that it is being shipped to, and the exporting company must be submitted to the CRT (Bowen 2008).

state of Jalisco as a whole the average is at 10.0% (INEGI 2000a). In Amatitán and Tequila, the two main municipalities that comprise the valley, 78% of agricultural land in the valley is planted with blue agave (SAGARPA 2006f). The tequila industry is seen by the local population as bringing job opportunities, value-added agriculture, and tourism to a depressed area that would have a hard time surviving without it (Bowen and Valenzuela 2009).

Research carried out in the municipality of Amatitán illustrates the very strong local impact of the tequila industry, in economic and also in social terms (Bowen and van Der Meulen 2008, Bowen and Valenzuela 2009). This municipality is located in the middle of the Amatitán-Tequila valley. It has 13,435 inhabitants, of which one quarter live in rural areas. Two major distilleries are located in Amatitán: Herradura and La Regional. In 2006, 7.3% of all tequila was produced in Amatitán (CNIT 2006). 33% of the population is employed in agriculture and 36% in manufacturing/industry, of which 85% is tequila distilling (INEGI 2000b). Many other economic activities in the municipality are also linked to tequila, such as barrel making. Interviews among 27 local farmers in 2006 confirmed that for most of them, blue agave was their principal crop (and often the only one), and that some earned incomes as agricultural day laborers or *jimadores* (agave harvesters) (Bowen 2008). Poorer smallholders rented out their land to one of the large agave growers or tequila companies, or sold their standing agave crop to a company. 18 out of 27 farmers were *agaveros libres*, i.e. landowning farmers without any contracts with tequila companies. Most of the inhabitants in Amatitán (and throughout the Amatitán-Tequila valley), then, are directly or indirectly involved in the agave-tequila sector.

We can speak of the existence of a real Porterian “cluster” (Macías 2001) in these regions, in which many different firms compete, but also reinforce each other through (inevitable) exchanges of information (Bowen and van der Meulen 2008). Around these tequila firms and the farms that supply their agave, a variety of specialized supply and trading firms have developed, as well as supporting bodies. Together they reinforce the specialization of the local economy on tequila, particularly in the Amatitán-Tequila valley. However, the continuing reinforcement of the cluster makes it increasingly difficult for other areas (within boundaries of the GI) to fully participate in and profit from the tequila cluster. Areas peripheral to the tequila cluster will remain or become suppliers of blue agave, or else they must try to develop a niche market for their local specialty distillate (e.g., the traditional liquor made from green agave in southern Jalisco).

## **Sustainability of economic impact**

The tequila sector has demonstrated its economic viability, but also has some weaknesses. The primary strengths of the industry are: (1) growing demand for tequila, especially in international markets; (2) international endorsement of the tequila GI; and (3) particularly strong growth in high-end market segments (Pace University 2006, Distilled Spirits Council 2007).

One major weakness, however, is that the entire history of the tequila industry has been characterized by cycles of shortage and surplus of agave (Bowen 2008, Bowen and Valenzuela 2009). During a period of surplus, agave prices fall so low that farmers do not have the necessary capital or the incentive to begin planting another crop of agave. In addition, when the price of agave is low, farmers neglect to monitor their agave plantations closely for pests and/or disease, which often leads to an outbreak. The combination of increased incidences of disease and pest infestation and decreased planting of new crops leads to a shortage cycle six to ten years later. During a period of shortage, agave prices become artificially high, which incites new producers to enter the agave market and encourages existing producers to expand their agave plantations, leading to another surplus a few years later.

The lack of regulation of the agave supply, and the continued cycles of surplus and shortage, most negatively affect the agave farmers, by contributing to economic differentiation and threatening the economic basis of the region. The effects of the cycles of surplus and shortage are compounded by extreme dependence of areas like the Amatitán-Tequila valley, in particular, and Los Altos, to a lesser extent, on the agave-tequila industry. The cycles of surplus and shortage have also served to increase concentration among the tequila firms. Although all firms were negatively affected by the most recent crisis, the smaller firms were less likely to have sufficient capital, and had less leverage with the agave growers to be able to buy the agave that they needed. Many of the smaller tequila firms, particularly the recently established firms, went bankrupt during the crisis. The CRT was quoted as saying that 30% of the tequila distilleries in Mexico were forced to shut down operations during the shortage (*Reforma*, September 25, 2000). As the largest tequila companies become more self-sufficient in their supply of agave, future shortages (such as that predicted in 2010 or 2011) will further consolidate the market power of the biggest tequila companies, because the smaller companies will be the only ones exposed to the risk of the cycles (Bowen 2008).

The instability and unsustainability of the tequila sector also manifests itself at the macro-economic level. In 2001, because of the scarcity of agave and the high price at which it was being sold, the Mexican government began providing the tequila companies with a subsidy of \$3.00 pesos per kilogram, which rose to \$9.00 pesos per kilogram in 2002 (González 2002). In 2006, the Ministry of

Agriculture allocated \$59 million pesos for agave growers, and the Mexican government allocated another \$200 million for agave growers in 2007.

In light of the negative impact that these cycles of surplus and shortage have had on the industry and the region, and rather than considering how collective strategies could be employed to stabilize the price for agave, the most powerful actors within the tequila supply chain (tequila companies, CRT officials, governmental officials, and even leaders of farmer associations) have focused on the need for planning and organization among the agave producers, while ignoring the fact that the tequila companies have begun producing their own agave, eliminating the *agaveros* from the supply chain altogether. This is a major weakness of the industry. The CRT and the state and federal government have failed to offer concrete solutions to the problem or to provide information or resources to facilitate planning and organization among the agave farmers (Bowen 2008, Leclert 2007).

### **Social impact**

Economic wealth created by tequila production has contributed to the general welfare of the population in Jalisco, but not for all social categories, and not for the entire GI production area (Bowen and van der Meulen 2008).

Small farmers have difficulty participating in and profiting from blue agave production. This is largely due to the characteristics of the crop, notably the long agave growth cycle, which makes prediction of returns difficult and requires high initial investments. Smallholders who decide to plant agave must have sufficient capital to be able to cover the costs of maintaining their agave plantations during the long period that it takes the agave to mature. This is particularly difficult for small and/or poor farmers given that credit can be very difficult to obtain, and extremely expensive, in Mexico (Bowen and Valenzuela 2009). In addition, as the largest tequila companies become increasingly self-sufficient in their supply of agave, small independent farmers are being eliminated from the supply chain altogether.

Furthermore, as discussed above, neither the CRT nor the Mexican government offer support to the farmers, either in terms of credit or in terms of resources to better plan and control the supply of agave. The CRT and the government tend to present the current agave surplus as primarily the responsibility of the agave farmers (Leclert 2007, Bowen 2008). They blame the independent farmers for not having established a contract with one of the distilleries. At the same time, traditional contract arrangements that give the farmer control over his or her land yet guarantee the sale of agave are becoming almost impossible to find (Bowen & Valenzuela 2006). Individual agave farmers do not have much bargaining power vis-à-vis the tequila companies when discussing the conditions of contracts, such as the price, quality standards, and production techniques. The CRT could help improve the weak position of common farmers by better

regulation agave supply (at least through provision of correct information), and add requirements to the GI law, in particular specifying cultivation methods in such a way that more labor-intensive practices are favored, and favoring the creation of local “*crus*” within the GI area.

Agave farmers in general are poorly organized, which reduces their ability to negotiate with the tequila companies and/or within the CRT or the National Chamber of the Tequila Industry. Thus, much of the value-added in the tequila supply chain goes to the tequila distillers, and to foreign bottling and distributing companies. The agave farmers’ associations are highly fragmented and the composition of these organizations is always in flux, as members shift from one to another, organizations are created and disbanded, and leaders frequently leave and are re-appointed. This lack of organization is likely due to a combination of many factors: the large size of the GI region, which pits different sub-regions against each other and makes it difficult for farmers to organize; the lack of education of most of the agave farmers; a tradition of corruption within the agave producers’ associations (in which the leaders of the associations guarantee sales primarily for their friends and relatives); and a lack of collective vision or traditions within broader Mexican culture (Leclert 2007, Bowen 2008, Bowen and Valenzuela 2009). The despair of agave farmers in times of low prices may lead again to distillery blocks or even larger-scale uprisings, as occurred in the mid-1970s and the late 1990s (Llamas 1999, 2000).

Small distilleries, often larger agave farmers or ex-agave farmers, face high entry barriers, due mainly to the (relatively) higher costs of complying with the norms (which decrease with economies of scale). According to a CRT representative, “The priority is not to make it easier for everyone to start producing their own distillate, but to make sure that what arrives at the consumers respects certain quality standards” (Leclert 2007). Furthermore, a trend towards standardization in the tequila industry threatens the diversity and specificity of tequila and favors the largest tequila companies (Bowen 2008).

### **Cultural impact**

Tequila has a very long history, particularly in the Amatitán-Tequila valley, where tequila production originated, although the industry also has long historical and cultural ties to the “Los Altos” region, which has been producing tequila for more than 100 years. As mentioned above, in 2006, the “agave landscape” of the Amatitán-Tequila valley was granted UNESCO World Heritage status, and in the same year, the industry received funding to develop a “Tequila Route,” similar to the wine routes that exist in wine-producing regions. Thus, cultural heritage and pride can be linked to economic opportunities (Ray 1998).

However, at the same time, the intensification and industrialization of agave cultivation is altering the traditional rural landscape. This can be considered a loss of cultural heritage and will have negative effects for the local population.

Moreover, the industrialization of the landscape may have adverse affects on the region's attractiveness for tourists and to the reputation of tequila as a quality product.

Related to this process is the gradual disappearance of the traditional cultivation practices (for example, intercropping agave with corn or beans, manual pruning of the agave to prevent pest infestation, organic fertilization), and know-how of agave farmers described above (Valenzuela 2005, Bowen and Valenzuela 2009). These are not (yet) are not valued by the rest of the tequila supply chain or public administration involved in the definition of tequila GI law. Because supply chain actors do not attribute the specificity of tequila to the traditional agave cultivation practices, they are largely unconcerned by shift in control from the local smallholders to the tequila companies. The tequila firms' primary concern is to guarantee a more stable supply of agave, not to guarantee the authenticity of the agave production process or the quality of the agave (Bowen 2008).

At the same time, there is a loss of mezcalera traditions of traditional agave distillates (made from a number of varieties of agave, and marketed informally) in areas outside the tequila valley (Bowen and van der Meulen 2008). The methods are more artisanal, and the distillates are usually based on different varieties of agave than the *Agave tequilana Weber* (Leclert 2007). However, as producers in southern Jalisco and other places within the GI region substitute diverse local varieties of agave (i.e., green agave) with *Agave tequilana Weber*, and as local distilleries modify production techniques according to the norms for tequila production, cultural heritage and biodiversity are threatened (Ibid.).

### **Ecological impact**

Despite, and most likely because of the shift from traditional, labor-intensive cultivation practices to more chemical-intensive practices, incidences of disease and pest infestation have actually increased over the last twenty years (Valenzuela 2005, Bowen and Valenzuela 2009). Especially after the massive pest infestation between 1993 and 1999 that killed 25% of the agave population in Jalisco (Ramírez 2002), the application of pesticides, herbicides, and fungicides has continually increased. However, because most farmers did not have access to information about appropriate rates of pesticide and herbicide application, they based their application rates on the recommendations of the agrochemical vendors, who had an interest in encouraging farmers to apply high rates of their company's product even when it was not the best product for the particular problem. Agave growers increasingly substitute more traditional, labor-intensive practices with more chemical-intensive but labor-efficient practices (Valenzuela 2005, Bowen and Valenzuela 2009). This is due to several factors. First, smallholders imitate the "technological packet" (Landeros 2005) required by the tequila companies (Valenzuela 2003). Second, labor shortages arise as household members migrate to Guadalajara or to the United States (Herrera 2004). Finally, there is a growing trend within the agave-tequila industry to value

the application of chemical inputs as prescribed by trained engineers over the expertise of experienced but uneducated agave farmers.

There is a long-term risk of soil depletion and erosion. Farmers' rate of application of fertilizers vary significantly according to the price of agave, and in the last twenty years, application rates have declined overall (Valenzuela 2005). In general, applications of fertilizers and lime increase when the price of agave is high, and decrease with the falling price of agave. During periods in which the price of agave is very low, farmers are also likely to be less vigilant in monitoring pest and disease infestation and in attempting to prevent diseases from spreading (Valenzuela 2003, 2005).

As it becomes increasingly difficult for independent farmers to sell their agave and as the cycles of surplus and shortage continue, it is likely that average rates of fertilizer application will suffer an overall decline. As discussed above, one way in which poorer farmers lower their expenses during difficult periods is by reducing the inputs that they apply to their agave fields (and in some extreme cases, abandoning their crops in the fields). During periods in which the price of agave is low, farmers are particularly likely to stop or significantly reduce the amount of fertilizer applied to their agave fields. Farmers may also choose to hire fewer workers to help them with pruning the leaves of the agave plant, removing weeds, spraying for weeds and pests, and the other activities that are necessary to maintain their crop. Therefore, the social and economic sustainability of the agave-tequila industry is intimately tied to the ecological conditions under which the agave is cultivated, and, moreover, that the two are likely mutually reinforcing (Bowen and Valenzuela 2009).

Finally, as described above, the norms that define tequila production have also contributed to a reduction in biodiversity in the GI region. Of the nine varieties of agave used in the production of tequila at the end of the 19<sup>th</sup> century (Pérez 1887), only one (*Agave tequila Weber*, also known as blue agave) is currently allowed by the official norms. This homogeneity contributes to genetic weakness and increases the risk of large-scale pest and disease outbreaks (Valenzuela 2005).

## **Recommendations and conclusions**

The following recommendations and conclusions are taken from Bowen and van der Meulen (2008).

### ***General lessons***

General lessons to be learned from the tequila case for the study or the improvement of GI systems outside of Europe:

- The initiative for legal GI protection (and for modifications to the GI scheme) must come from the supply chain actors themselves, during



- Standardization in the tequila industry has led to a loss of specificity and local knowledge, as well as negative social and ecological effects. The most powerful stakeholders in the industry, the large tequila companies, have defined quality in a very standardized and homogenized manner, in order to improve tequila's reputation among consumers and distinguish "tequila" as a category. The technical quality of tequila (measured in terms of absence of defects) has improved since the CRT was created in 1994, but the diversity of flavors and traditional methods that have historically defined the industry are being lost.
- The lack of governmental involvement in Mexican GI policy in general and in the tequila industry more specifically, combined with the inequalities that characterize relations between the agave growers and the tequila producers, have resulted in the increased social exclusion and marginalization of the (smaller) agave farmers. Eventually, agave farmers may be pushed out of the supply chain altogether. We can hypothesize that, in a context of consolidation and rationalization within the tequila industry, the gains of increased economies of scale are falling into the hands of an ever-smaller group of firms and farms. Moreover, as the tequila companies are bought out by multinational liquor companies, the benefits of the tequila industry are increasingly attributed to extralocal (non-Mexican) actors. On the other hand, there are some political and market pressures to claw back some of the "lost" value added by insisting on the bottling of tequila within the GI production area.

### ***Policy recommendations***

- The Mexican legislation on GIs needs to be revised, if the Mexican GIs are to have any broad effects on rural development. The inclusion of broader social and environmental goals of GI protection in the Mexican legislation on GIs would be an important first step to improving the sustainability of Mexican GI protection schemes.
- The agave farmers need to be better incorporated into the governance of the tequila industry and the norms that dictate production practices. The CRT, the collective organization that governs production and theoretically integrates all of the supply chain actors, has failed to do this. State involvement is needed to provide some guarantee that the benefits

- The cycles of surplus and shortage of agave threaten the sustainability of the industry and the livelihoods of the actors involved (agave farmers, distilleries). The CRT and the Mexican government need to work together to educate the agave farmers on when to plant agave and to make the projected future supplies of agave publicly available, broadly disseminated, and easy to understand.
- Producers and policy makers should seriously consider a transition to 100% agave in order to maintain the reputation of tequila on the market. Tequila producers should be allowed sufficient time to adjust their marketing channels. An indirect positive effect of a 100% agave transition is that it would make crop planning easier, since it would reduce the distilleries' flexibility in the proportion of agave used.
- The connection between the *terroir* of the region and the quality of tequila need to be emphasized and valorized, both in order to maintain tequila's reputation and to preserve the cultural and ecological resources that have contributed to the specificity of tequila. Overall, quality standards and production relations in the tequila industry have evolved in a way that threatens the connection to *terroir*, which has had negative effects on the traditional agave farmers and the local region and landscape. Although many supply chains actors express a belief in the basic idea of *terroir*, the major tequila companies have blocked initiatives to better protect the *terroir* because they feel that it is not in their economic interest to do so (Bowen 2008). By emphasizing other quality attributes (i.e., the type of barrels used, the method for cooking the agave, and the amount of time that the tequila is aged), the tequila companies are able to remain very flexible in their agave supply arrangements and minimize costs. Since the legal definition of "*denominación de origen*" in Mexico explicitly incorporates the concept of *terroir*, the Mexican state should require that GIs and quality norms do a better job of maintaining the link to *terroir*.
- Consumers need to be integrated into the definition of the norms for tequila production. On one hand, since initiatives for legal protection come from large-scale distilleries and distributors, the norms that govern tequila production have evolved according to the demands of the biggest tequila companies (and the multinational liquor companies that own them), and have favored increased standardization, delocalization, and industrialization of tequila production. In addition, tequila labels are deliberately made confusing and obscure. For example, tequila



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