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Article

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RESEARCH

The Last Harvest? From the US Fentanyl Boom to the Mexican Opium Crisis

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For decades, farmers in the most marginalised regions of Mexico have depended for survival on the illicit cultivation of opium poppy for the US heroin market. In 2017 they could earn up to 20,000 pesos (\$950–\$1,050 dollars) per kilo of opium, which channelled around 19 billion pesos (\$1 billion dollars) into the country's poorest communities, sustaining regional economies, religious ceremonies, and intra-community relations while stemming out-migration to Mexican cities and the US. With the recent upsurge in fentanyl use in the US, however, the demand for Mexican heroin has fallen sharply, meaning that farmers are now being paid around 6000 to 8000 pesos (\$315–415 dollars) per kilo of raw opium. Thus the total money being paid to opium producing villages has dropped to an unprecedented low of 7 billion pesos (\$370 million dollars). Drawing on fieldwork conducted in two poppy-producing regions of Mexico – one in the State of Nayarit, one in the State of Guerrero – this article shows that today, farmers cannot make a profit from opium once fertilizers and other capital inputs have been taken into account; village economies are starting to dry up; and out-migration is on the up. But this economic emergency opens the possibility of wresting Mexico's opium-growing regions from the control of Mexico's Drug Trafficking Organizations (DTOs). This article concludes by addressing several possible solutions to what we term 'the Mexican Opium Crisis' – including crop substitution or opium legalization for medicinal use – and evaluates how realistic they are in the Mexican context.

Keywords: Mexico; Opium; Fentanyl; Crop Substitution; Drug Regulation; Migration; Market Crises

Introduction

Across the US, the increasing recreational use of fentanyl – a synthetic opioid 30 to 50 times stronger than heroin (DEA 2017) – has generated plenty of headlines. Due to its potency, fentanyl has caused a rapid increase in the number of US overdoses from synthetic opioids, which have risen tenfold in just four years, from around 3000 in 2013 to nearly 30,000 in 2017 (NIDA 2019). Fentanyl is now involved in 60% of total opioid deaths – an astonishing figure for a drug that, for many years, was safely used in US hospitals as an anaesthetic and for the treatment of severe pain, but was rarely found on the streets (Jenkins 1999).

Everything changed in 2014, when illicit pharmaceutical manufacturers in China began to use the internet to advertise fentanyl to US dealers as a profitable addition, or alternative, to heroin (Gilbert, Dasgupta 2017); and one that, thanks to its potency, could be shipped to cities across the United States cheaply and easily via the Postal Service, DHL and FedEx (US Senate Staff 2018). Since then, fentanyl has cut into the use of heroin, despite most opioid users' clear preference for the latter (Ciccarone 2017; Goodnough 2019). This shift is difficult to quantify, as small amounts of fentanyl are often added to poor quality heroin to increase its potency, while in other cases, fentanyl itself is bulked out with inert fillers and marketed as heroin (Ciccarone 2017; Fairbairn et al. 2017). But the signs of fentanyl's increasing popularity with traffickers and dealers are clear: in 2016, as the quantity of heroin overdoses decreased for the first time in a decade (Pardo 2018), overdoses related to fentanyl and its analogues became the number one cause of overdose deaths

(NIDA 2019). In 2018, a pioneering study in Vancouver found that 80% of drugs marketed to local users as 'heroin' actually contained no heroin at all; instead, most contained fentanyl (Woo 2018). And by early 2019, heroin had largely disappeared in much of the US, 'from New England mill towns to rural Appalachia, and in parts of the Midwest that were overwhelmed by it a few years back... because synthetic fentanyl, a deadlier drug that is much cheaper to produce and distribute than heroin, has all but replaced it' (Goodnough 2019).

The Senate has launched investigations into the sources of the drug, its transportation to the United States, and its production. There have been calls for China to stop the production of fentanyl precursor chemicals, which it finally did in February 2018 (Pardo 2018), and there have been alarmist tales of fentanyl being mixed with all sorts of other recreational drugs, including cocaine and marijuana (Neuman 2018). In fact, fentanyl use has become so prevalent that in some quarters of the US press, the national opioid crisis has been rechristened 'the fentanyl crisis' (Bloomberg 2018).

But as well as leaving a trail of dead consumers and fractured communities across the United States, rising fentanyl use has led to another, lesser-known crisis south of the border. Here, peasants in some of Mexico's poorest and most marginalised communities have long depended for their livelihoods on the illicit cultivation of opium poppy to supply the US heroin market. Drawing on intensive fieldwork carried out in two poppy-producing regions of Mexico – one in the state of Nayarit, one in the state of Guerrero – this article shows that the upsurge in American fentanyl use has caused US demand for Mexican heroin to fall sharply, even as the area dedicated to opium poppy cultivation in Mexico has continued to grow (US White House 2018; UNODC, 2000–2018). The potent combination of plummeting demand and increasing supply, exacerbated by a steady drop in the value of the Mexican peso, has, in the space of little more than a year, massively depressed the price of raw opium gum in the Mexican countryside. To put it simply: for the first time in modern Mexican history, illicit natural drugs have ceased to be profitable cash crops.

Over the following pages, we explore the immediate effects of this market crash, which we term 'the Mexican Opium Crisis,' based on material drawn from several ongoing research initiatives in the Mexican states of Nayarit and Guerrero. We collected most of this data incidentally, over the course of several years of field-based research into the wider history and ethnology of communities that also happened to be deeply involved in opium production. The last visits occurred in 2018 and lasted for several weeks. The (anonymised) communities used as case studies in this article are difficult to access due to geographic isolation, ongoing violence, and high levels of distrust on the part of the inhabitants. We therefore relied on our substantial field experience in these areas, and our detailed knowledge of the broader social, economic, and political context of local opium production, to carry out of dozens of semi-structured interviews, along with more general discussions and in-depth participant-observation, with those most affected by the Mexican Opium Crisis. Such investigative activities were only possible thanks to the ties that we had previously constructed with local poppy farmers, their families, members of criminal groups, and communal and local government authorities.

By supplementing the results of this ethnographic approach with information from researchers working in other poppy-producing areas of Mexico, along with data drawn from UN reports, US and Mexican government briefings, and journalistic sources, this article highlights the local, regional, national, and international importance of the Mexican opium trade. It first presents a history of Mexican opium production prior to the current crisis, demonstrating the centrality of illicit poppy cultivation to social, political, economic, and even religious life in rural areas where the Mexican state has always been weak or absent, while also showing the depth of the industry's ties to US markets. The article subsequently examines how the catastrophic decline in earnings from opium production over the last twenty months has severed tens of thousands of peasant producers' only access to funds that once supported wider, licit local, and regional economies, paid for communal religious ceremonies, shaped intra-community relations, and stemmed out-migration from rural regions towards Mexico's cities or the US. We assess the short-term effects of this disruption, and then suggest some of the potential, longer-term consequences of the Mexican Opium Crisis on village life, Mexican political structures, US-Mexican relations (especially in terms of border tensions due to a surge in Mexican migration to the US), and on the tactics and profit-making strategies of DTOs in former poppy-producing regions.

Finally, we also suggest that the Mexican Opium Crisis might offer certain opportunities for reform in rural Mexico. As the declining price of opium shifts farmers' cost-benefit analysis away from poppy cultivation, the government could use this momentum to push for projects that seek to move them away from dependence on illegal crops, and, in so doing, wrest control of the areas in which they live from DTOs. We examine the pros and cons of two of the most talked-about potential solutions to the problems of drug production in the Mexican countryside: crop substitution programmes, and the legalisation and regulation

of opium production for medicinal ends. We assess the likelihood of their successful implementation, in the context both of the current political situation in Mexico as a whole, and of the wider history of (failed) development programmes in areas that are today the country's opium-production hotspots. This article therefore shines a light on a series of neglected but crucially important socio-economic shifts currently underway in the Mexican countryside. It contributes to academic debates regarding the dynamics of illicit cultivation and its relationship to wider economic cycles, and highlights the local roots of international drug trafficking. Ultimately, the findings presented in this first overview of the Mexican Opium Crisis – which call for further, dedicated research into the subject – have important implications for public security in Mexico, as well as major ramifications for counter-drug efforts at international level.

The National-Level Significance of Opium Production in Mexico

The illicit cultivation of opium poppies in Mexico dates back to the 1940s, when Mexican merchants paid a few hundred farming families to produce opium for processing 'black tar' heroin for consumption in the US. Despite a brief spell of dominance during the immediate post-war era, it never accounted for more 5–10% of the market (Schneider 2008; Collins 2015). Low returns limited most Mexican opium production to the mountainous 'Golden Triangle' region of Sinaloa, Durango, and Chihuahua.¹

This began to change in the late 1960s, when drug traffickers moved south through the Sierra Madre Occidental, recruiting peasants to grow marijuana for the expanding US market (Kamstra 1974). Then, when the so-called French Connection linking US heroin demand to European suppliers collapsed in the early 1970s, Mexican traffickers filled the void. Marijuana growers in Jalisco, Michoacán, Guerrero, Oaxaca, and even Chiapas turned to growing opium and producing heroin. In the late 1970s, this first wave of widespread opium production declined due to a mixture of chemical spraying, military repression, and market shifts. By 1978 new sources of better quality Asian heroin had become available; US drug users were abandoning heroin for cocaine; and Mexican traffickers realised that cocaine was more profitable and easier to smuggle than heroin (NNICC 1984; Heath 1981; Astorga 2001).

During the 1990s and early 2000s, a mixture of forces affecting both the supply and demand sides of the international drug trade reignited Mexican opium production. In Mexico, 'neoliberal' economic policies and the signing of the North American Free Trade Agreement (NAFTA) in 1994 cut into agricultural subsidies



Figure 1: The head of an opium poppy.

¹ According to documents from the National Archive and Records Administration (NARA), Record Group (RG) 170 and the Casas de la Cultura Jurídica of Mazatlán, Tijuana and Ciudad Juárez, these were Badiraguato, Mocorrito, Cosala, Sinaloa de Leyva, Culiacán (all in Sinaloa); Tepehuanes, Tamazula, Topia, (all in Durango); and Guadalupe de Calvo and Parral (both in Chihuahua).

Though opium production has expanded geographically, certain regions still produce the majority of Mexico's crop. These include Guerrero, where every one of the state's 81 municipalities has been involved at some level in opium production, where the military claimed that 1,287 communities were involved in opium production in 2016, and where Padgett claims 60% of Mexican opium is grown (Padgett 2015; Aguilar 2016). They also include the Golden Triangle, where Padgett claims around 25% of Mexican opium is produced (Padgett 2015).

The Mexican Opium Crisis at Local Level

However, over the last few years, rising US fentanyl use has led to a dramatic drop in demand for heroin in the world's biggest drugs market, even as Mexican opium production has risen to record levels. This shift (exacerbated by the accelerating decline of the peso) has radically depressed the price paid for the raw opium produced in rural Mexico – until recently the source of more than 90% of the heroin consumed in the United States. In the following section, we demonstrate the extent of this economic decline, and outline its broader socio-economic effects, via two ethnographic case studies: one of 'Village A,' in the Sierra Madre Occidental of Nayarit, and another of 'Village B,' in the Sierra Madre del Sur of Guerrero.

Both communities are in mountainous and marginalized regions of rural Mexico, whose inhabitants depend for their livelihoods on opium production. In Village A and the surrounding region, 91% of the population officially live in poverty, and 61.6% in 'extreme poverty' (CONAPO 2016). Similarly, in Village B and the surrounding area, more than a third of the population live in 'extreme poverty' (compared to the state-wide average of 24.5%), while 35.6% have an income that is 'inferior to the level of minimum economic welfare' (INEGI 2015).

Both villages have also long been affected by the violence, insecurity, and social breakdown produced by decades of militarised anti-drug campaigns in the Mexican countryside. When the 'Opium Crisis' began in 2017 – also the most violent year officially registered in Mexican history – Guerrero was the second most violent state in the country, with 2,575 homicides and a homicide rate of 71 per 100,000 inhabitants. The much smaller and less populous state of Nayarit has also been hard hit by the conflict, especially in recent years: in 2017, there were 354 homicide victims recorded in the state, a 743% increase over the 42 registered in 2016 (INEGI 2017, 2018). The specific municipalities of Nayarit and Guerrero in which Villages A and B lie have been disproportionately hit by this violence, much of which is related to conflicts between rival DTOs over control of local opium production and transport routes.



Figure 4: Map of Opium Production in Mexico.

The Opium Crisis in Village A

Village A, located high in the mountains of northeastern Nayarit, is home to a total of around 5,000 individuals, the vast majority of whom are indigenous Cora (or *Naayari*) people. They live most of the year in small ranches scattered across the village's state-recognized, communally owned territory. This territory spans tens of thousands of hectares and includes numerous distinct ecological niches, from highland pine forests to low-lying subtropical zones. Local subsistence strategies have traditionally included cattle ranching, hunting, gathering, and, above all, cultivating squash, beans, and maize on small plots cleared using slash-and-burn techniques, and shifted every few years.

Since at least the mid-twentieth century, many in Village A have also worked as temporary labourers on coastal tobacco plantations during the dry season (when cultivation of their traditional subsistence crops is impossible). Conditions are harsh and wages low, but the villagers value access to cash, which they invest in livestock (particularly cows, ownership of which confers important prestige), and use to finance local religious celebrations; supplement their diets with bought foods such as rice, pasta, cooking oil and extra meat; buy beer, tequila, and other alcoholic drinks; purchase pick-up trucks and gasoline; and obtain medicines, clothing, livestock, and non-traditional housing materials, such as bricks, breeze-blocks, and aluminium roofing.

More recently the cultivation of opium poppies and marijuana has allowed local people to earn cash without having to spend the dry season on the coast. Instead, by supplementing rainy-season subsistence cultivation with that of poppies (which require a plentiful supply of water), and during the dry season growing marijuana (which is resistant to drought), the people of Village A and neighbouring communities can earn substantial amounts of cash without leaving their homelands. This enables them not only to continue to finance, but also to more regularly attend, the indigenous rituals that are central both to local religious life and communal political organization.

According to local informants, teachers who had previously worked close to Nayarit's border with Sinaloa first introduced poppies and marijuana to Village A in the 1980s. The teachers explained that the seeds would grow into crops that were far more valuable than any of the other cash crops – such as oats, alfalfa, or peaches – with which the villagers had occasionally, and unsuccessfully, experimented in the past. The villagers, who knew little about national laws prohibiting the cultivation of either poppies or marijuana, saw in both crops a convenient way of supplementing traditional subsistence activities.



Figure 5: Landscape around Village A, Nayarit.

In the same manner as they cultivated maize, villagers sowed poppies and marijuana in small plots carved using swidden techniques from the local forests (whose trees hid these crops from prying eyes). They sold the products to the same teachers who had first given them the seeds. Since the 1930s, teachers had served as mediators between Village A and state and government agencies, and now – in buying up locally-produced opium and marijuana and selling them on to regional DTOs affiliated with the Sinaloa Federation – they became bridges between local people and drug-traffickers. The latter took charge of processing the opium into heroin. The people of Village A thus remained peasants, rather than drug technicians, with little knowledge of the use to which their opium was put.

In the early 1990s, the Mexican army and police forces arrived in Village A to destroy crops and arrest growers. Some of the villagers resisted such efforts, occasionally attacking their persecutors with .22 hunting rifles or shotguns, or even investing in heavier weaponry – such as AK-47 automatic rifles – purchased from corrupt officials or drug traffickers. A few young men were killed, and many more were imprisoned in state or federal jails (where they came into contact with higher-level members of DTOs). But despite these risks, the disintegration of the regional and national agricultural economies following the signing of NAFTA in 1994 pushed Village A's inhabitants to become ever more dependent on opium and marijuana production for cash income.

By early 2013, marijuana cultivation had mostly disappeared from the region, and had been replaced by opium poppy. At least 75% of local households – a total of around 3,750 men, women and children – now depended for the bulk of their annual cash income on opium production. The shift from marijuana to poppy cultivation, together with the risk of crop destruction by state forces, hailstorms, or insects, encouraged villagers to grow poppies during the dry season as well as the rainy season, which required investment in small-scale irrigation infrastructure. They also tried to increase their yields by investing in commercial fertilizers and pesticides.

The poppies continued to be grown on plots less than a hectare in size, but these were located in ever more remote, rugged areas far from the village itself (and thus from the police and soldiers who periodically arrived there in search of illicit crops). Due to the practicalities of setting up gravity-fed irrigation systems, these plots are often located close to streams; and given that the streams located furthest from the centre of Village A mark its boundaries with lands belonging to neighbouring villages, the rise in irrigated poppy cultivation exacerbated inter-communal territorial conflicts, sometimes resulting in outbreaks of violence (which became more severe as automatic weapons became more common). However, the sale of opium to a select few local middlemen – increasingly villagers who had become friends with members of DTOs in prison, rather than teachers – enabled the people of Village A to resist the migratory pressures faced by peasants in most of rural Mexico. It also allowed them to continue financing and taking part in their indigenous ritual practices, helping them to withstand the acculturative pressures emanating from mainstream Mexican society.

Our data indicates that in 2013 and 2014, farmers in Village A could sell a kilo of raw opium for 15,000 pesos (\$1,175 dollars). In this period, a single poppy plant was reported to produce between 4–5 g of raw opium. Around 10 plants could be planted per square meter. Thus, a one-hectare plot gave a typical opium producer in Village A between 4–5 kgs of opium per season, assuming their harvests were not hit by army raids, harsh weather, or insects. They could therefore expect a net return of between 60,000–75,000 pesos (\$4,700 and \$5,880 dollars) every six months (minus the costs of fertilizer, irrigation equipment and their own labour, etc).³

The exhaustion of the soil in the limited plots of land in which opium cultivation was possible, together with severe plagues of insects and disease, required local people to use ever larger quantities of fertilizers and pesticides. This ate into their profits, and forced them to spend ever more time supervising poppy plots in remote areas, obstructing their ability to simultaneously cultivate corn, beans, and other traditional subsistence crops closer to the village. The young men directly involved in opium cultivation, as well as the families these men were forced to leave alone in their *rancherías* for weeks at a time, were also increasingly exposed to the risk of attack both by the Mexican security forces, and armed commandos representing the various DTOs fighting for control of the regional drug trade.

And as merchants tried to take advantage of the increasing monetization of the local economy by importing ever larger quantities of commercially produced alcohol into the village, social problems related to excessive drinking – namely chronic alcoholism, domestic abuse, and drunken, often lethal violence between heavily armed young men – climbed exponentially. But those who avoided arrest, murder, or alcohol-induced illness continued to benefit from a steady growth in the price of raw opium from 2014 to 2017. By early 2017, the price of opium in Village A had risen to a record high of 18,000–20,000 pesos (\$950–\$1,050 dollars) per

³ The conversion from Mexican pesos to US dollars is here based on the 2013 average conversion rate of 12.76 pesos to the dollar.

kilo, meaning that a 1-hectare plot of poppies cultivated during both the rainy and dry seasons could give a peasant family a net return of up to 200,000 pesos (\$10,580 dollars) per year.⁴

However, 2018 saw a radical drop in the price of opium in Village A, to a historic low of around 8,000 pesos (\$420 dollars) per kilo, meaning that the cultivation of a 1-hectare plot of poppies gave an annual net return of only 64,000–80,000 pesos (\$3,330–4,160 dollars), a decline of more than 50 percent in a single year.⁵ When the price of labour, the risks of death or imprisonment, and the costs of production – including increasing outlay on fertilizers, pesticides, irrigation equipment, and shop-bought food (to compensate for the fall in subsistence crop production associated with opium cultivation) – are factored in, it is clear that poppy cultivation was suddenly a much less viable survival strategy for Village A's inhabitants. As a result, late 2018 saw a relative decline in the total area of communally owned land being used for opium production, and a sharp increase in the number of villagers leaving for work in nearby cities or the plantations of the Nayarit coast.

Other villagers, who as autonomous poppy cultivators had previously had little contact with regional DTOs, were directly contracted by the latter to work as wage-labourers on poppy plantations in the Golden Triangle. Working for subsistence wages of 150–200 pesos (\$7.80–10.40 dollars) per day, these men, women, and children, living in unsanitary conditions in temporary camps close to the poppy fields, risk illness and/or violent abuse at the hands of armed members of DTOs.⁶ The children are also deprived of the chance to attend school, while as their dependence on DTOs becomes increasingly direct, their distance from the Mexican state grows, and they become ever more disconnected from the ritual practices upon which social and political life in Village A is founded, exacerbating local processes of social breakdown, and attendant rises in interpersonal violence.

The Opium Crisis in Village B

Village B is one of a succession of small villages – each home to between 500 and 1000 inhabitants – that lie on the crest of a mountain range in central Guerrero that reaches up to 2400 meters above sea level. The region forms a strategic commercial corridor that connects the Pacific coast of Guerrero with mainland highways that go north all the way to the United States. As one local farmer recalls,

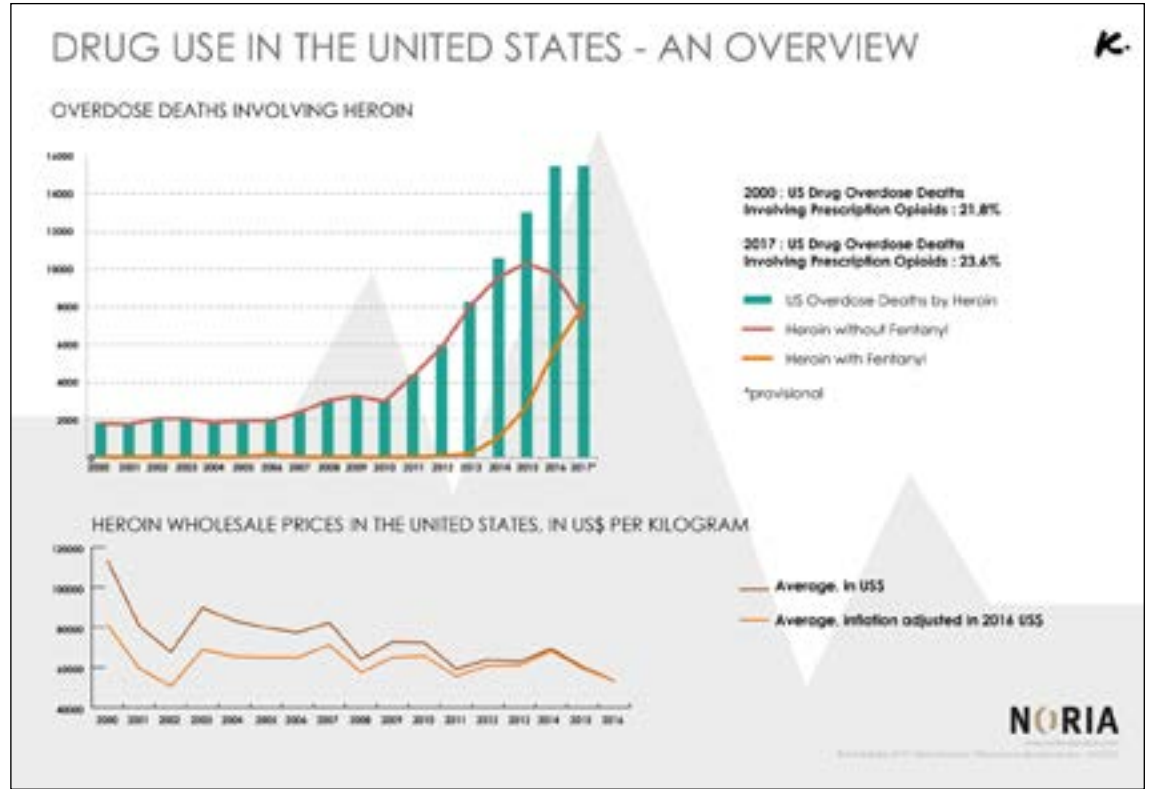


Figure 6: Drug Use in the United States.

⁴ Conversion based on the 2017 average rate of 18.91 pesos to the dollar.
⁵ Conversion based on the 2018 average rate of 19.22 pesos to the dollar.
⁶ Conversion based on the 2018 average rate of 19.22 pesos to the dollar.

'This area has always been a necessary route and a conflictive zone... Mainly because it is the main door to access the sierra. This is a crucial region, you have to understand that.'

The region has been producing opium and heroin since at least the 1960s, when Sinaloans brought poppy seeds to the mountains of Guerrero. Yet massive current poppy cultivation in the area around Village B is heavily related to the second boom in US demand for heroin, which occurred in the 2000s. This context also pushed traffickers to improve the quality of the heroin produced locally, moving from Mexican 'black tar' to 'China white.'

Based on evidence collected during the fieldwork conducted in the region in 2018, it appears that most of the male population of this area works in poppy production, while women and children can also participate as a secondary activity, helping a family member or a relative during peak times of production, when a large labor force is most needed. This is especially true at the beginning of each productive season – when farmers need to clean and prepare the fields for sowing – as well as four months later, during the harvest (Ospina, Hernández & Jelsma 2018).

As such, most of the local population is engaged in farming activities that are related to the growing of poppies and the eventual harvesting of raw opium paste. Unlike in Village A, some local people also participated in the next phase, the transformation of opium paste into pure heroin. A local drug boss and his 'employees,' including both men and women, controlled this process. Numbering from 50 to 100 individuals according to the task at hand, they included armed men working as *sicarios*, women working as lookouts (or *halcones*), and other local people, including young children, who help the drug boss in different daily activities. Most of these people – including the drug boss – were born and raised in the same area, and so the rest of the local population do not refer to them as constituting a drug cartel.

In the Sierra Madre del Sur, poppy cultivation offers three harvesting sessions per year (rather than the two harvests common in Nayarit). Local people refer to this production cycle as the 'complete season' (*temporada completa*). It includes a 'wet' harvest, which takes place during the rains (from June–July to October–November), and is when the cheapest, weakest, most 'watery' opium of the year is produced. Then, from November–December to February–March, there is the *sereno* period, an intermediary season both in terms of prices and quality; after which, finally, comes the dry season production (the *secas*), which is harvested around April–May, and gives the strongest and most profitable product.

Contrary to what has been observed and described in other areas of the country, in Village B the poppy fields are not relegated to small patches on remote mountainsides. Instead these start right outside the villages, sometimes as close as a hundred meters from the main, paved road. From there, they extend to cover most of the slopes and ravines in the area. During our fieldwork, we visited poppy fields that were located within a 15-minute walk, as well as other extensions that were more isolated and required several hours hiking to reach. Even here it must be noted that most of the poppy fields are not really hidden, and that most of them were visible from a considerable distance, especially when the poppy flowers were in bloom effectively covering the sierra in thousands of red dots. It is also important to mention that this part of the municipality hosts a semi-permanent army base, which is located on top of a hill, and allows soldiers to patrol the area day and night, by land and air.

Common views of opium production hold that the practice is systematically hidden in remote, hostile, and inaccessible areas. In this part of Guerrero, however, poppy production is both connected to local knowledge and skills – people *know* how to produce the best quality possible opium paste – and to the social and/or family ties of the inhabitants. In these villages, everybody knows everyone else; everyone also knows exactly where each person's poppy field or parcel is located. Locals also know perfectly well who is 'doing fine,' who had a 'rough season,' or who had his fields destroyed by the army. In fact, contrary to what macro-analysis tends to convey, in the Sierra Madre del Sur, drug production, and especially 'natural' drug production such as that tied up with poppy cultivation, is rooted in very strong, and very local, social dynamics, where the entire production chain is concentrated in the villages, from poppy and opium base extraction, to heroin production in the local laboratories.

The laboratories are located in the very same villages in which farmers grow the poppies. In this area of Guerrero, the local drug boss assumes the role of the *acaparador* – literally the 'grabber' or 'gatherer.' This designates the person who is simultaneously able to 'offer protection' to the local farmers and growers, and assure them that he will buy, with no exception, their entire crop. Therefore, the local production scheme and market runs as a closed economy, articulated with brokers and political intermediates that ensure its efficient function and connection to broader political and economic systems. It relies on the assurance for growers that the *acaparador* will buy their production as long as they respect a certain level of purity and

quality of the opium paste, and the assurance, for the local drug boss – through a regime of coercion and protection – that he will be able to produce heroin on a constant basis. Then, the *acaparador* sells the pure heroin to a bigger organization, capable of transporting and distributing it to the United States, because he does not have this ability himself.

The local social embeddedness of the production and the trade has decisive implications for the drugs economy. When the market is up, it provides a constant economic bonanza for the entire region. One local explained:

'When the business is good, it is good for everybody, you have economic fluidity around here [*había buena fluidez económica por acá*]... People were spending their money locally, they would buy cement, or tiles to the shopkeeper here, in order to improve their houses you know... They would buy fertilizers for their lands, throw good parties for their daughters and the *quinceañeras*... weddings and all these stuff... So the money would circulate in the village.'

Until mid-2017 and the start of the opium crisis, a local farmer could make around 80,000 pesos (\$4,230 dollars) a year through poppy cultivation. The farmers who had more economic capital to invest, especially in order to recruit day laborers, buy machines, and install irrigation systems, could make around 200,000 pesos (\$10,580 dollars) a year. The locals agree that 'this was before the crisis,' from 2016 to 2017, which looking back seems to be when prices peaked. Back then, a kilo of opium base paste would be sold to the *acaparador* for a price that, according to the season, ranged between 20,000 and 28,000 pesos (\$1,060–1,480 dollars).⁷

Then, the crisis hit: between October of 2017 and summer of 2018 the prices dropped to a historic low of 6,000 pesos (\$315 dollars) a kilo, while certain farmers were mentioning rumours of prices going even lower, around 4,000 pesos (\$208 dollars) a kilo.⁸ When asked about the reason for this economic collapse, all locals were adamant that the crisis was provoked by the *gringos* (i.e. North Americans, and more specifically, as the research cited above shows, US traffickers and dealers rather than users), and a 'new synthetic drug sold in the US.' Local growers explained that 'the *gringos* now have this new stuff, they don't like heroin any more, that's why we don't sell....' Given this critical situation, some farmers considered quitting poppy cultivation, and said that emigration from their native land would be their only viable option if the US demand failed to rebound. Similarly, the local drug boss was also extremely worried about the fall in US demand, as he felt he could lose his socio-economical power in and leverage over the region, as his role a protective 'drug boss' would mean nothing if the need for heroin disappeared.

The Opium Crisis at National Level

The case studies outlined above raise a series of important questions: namely, does the current situation in Villages A and B reflect broader trends in the Mexican countryside? And, if so, what are the potential national effects of a collapse in the Mexican opium market?

The evidence from other key opium-producing regions of Mexico, such as the 'Golden Triangle' municipalities of Sinaloa, and the rugged Mixteca region of Oaxaca, suggests that the dramatic fall in opium prices in Guerrero and Nayarit does indeed reflect a nationwide crisis. In Sinaloa, there has been a very similar drop in the price offered for a kilo of opium, from around 18,000 pesos (\$950 dollars) in 2017, to between 8,000 pesos and 12,000 pesos (\$415–625 dollars) offered for the 2018 harvest. Oaxaca has seen the same declining trend, from prices of around 20,000 pesos (\$1,060 dollars) per kilo offered in 2017, to around 6,000 pesos (\$315 dollars) in 2018.

Taken together, these figures suggest that opium prices vary between different regions, depending on a range of factors. These include the local quality of opium, the relative bargaining power of different communities, the coercive power of dominant regional DTOs and the severity of conflicts between rival groups, the physical distance between producers, markets, and supply routes, prevailing retail prices in the United States, and variances in the amount that government officials charge for protection. But they all show one very clear trend: opium prices are on the decline, and the effect is on a very large scale.

By combining UNODC estimates of opium production and the different prices offered for opium gum, we can roughly estimate a) the amount of money that was entering the Mexican countryside from the opium trade in 2017, and b) how much this figure has fallen over the past year. It should be noted that

⁷ Conversion based on the 2017 average rate of 18.91 pesos to the dollar.

⁸ Conversion based on the 2018 average rate of 19.22 pesos to the dollar.



Figure 7: Opium Poppy Field, Guerrero.

these are supply-side estimates and do not take into account actual levels of demand or consumption, and have not been modified by estimates of crop damage, seizure, or other factors that could reduce revenues.

The figures tell two stories. On the one hand, they demonstrate the sheer value of the opium crop to the very poorest regions of rural Mexico over the past few years. Poverty levels are higher than the national average in 774 of the 849 opium-growing municipalities. Famed opium-producing municipalities, like Badiraguato, Sinaloa, but also less lauded centres like Villages A and B, have more than a third of the population living in extreme poverty.

The value of the opium crop in 2017 was probably around 19 billion pesos (\$1 billion dollars) – that is, significantly more than the total value of the beans (16 billion pesos, or \$846 million dollars), wheat (13 billion pesos, or \$687 million dollars), or cotton (12 billion pesos, or \$636 million dollars) then being produced in Mexico. More tellingly, perhaps, the value of the Mexican opium crop in 2017 outstripped the entire value of agricultural output in 26 of Mexico's 32 states, including Guerrero (7 billion pesos, \$370 million dollars), Oaxaca (4 billion pesos, \$212 million dollars), and Puebla (11 billion, \$582 million dollars). To put it another way, if 60% of opium is produced in Guerrero, opium production outstrips legal agricultural production there by about 2.5 billion pesos (\$132 million dollars) (Gobierno de México 2017).

On the other hand, these figures demonstrate the radical decrease in the value of the opium crop over the past year. In 2018, Mexican opium farmers have probably made around 7 billion pesos (\$364 million dollars) or – if we take the Guerrero figures as indicative – even as little as 5 billion pesos (\$260 million dollars). Such amounts suggest a decrease in earnings of as much as 63%. As the case studies of Guerrero and Nayarit demonstrate, this is causing serious secondary economic effects in municipalities where opium had been the main source of revenue for local people. Peasants are not even making back their investment on the product; families are losing their sole source of income; and the amount of money flowing into the local economy has dried up almost completely. As the Trump administration's clampdowns makes it ever more difficult for desperate peasants to seek new opportunities as migrant labourers in the US – an option that has long constituted a safety net for rural Mexicans – many former opium producers are instead fleeing to Mexican cities where uncontrolled rural-to-urban migration has long been tied to social breakdown and rising violence; while others are left with no choice but to work directly for Mexican DTOs.

A Way Out for Mexico's Opium Growers?

While the prognosis is bad, the current opium crisis may also provide an unprecedented opportunity to move poorer regions of rural Mexico away from their dependency on illegal crops, and, in so doing, wrest control of these areas from DTOs. As price of opium continues to decline, two ideas that have been floating around for years but are now gaining greater political traction – namely crop substitution programmes, and the legalisation and regulation of opium production – appear genuine, if limited, possibilities for change.

Legalization and its limits

Under a legalization and regulation scheme, Mexican peasants would cultivate poppies and sell their opium harvests to private pharmaceutical companies, who would convert the opium into morphine for use within Mexico's semi-socialised national health system. The idea has been around for at least two years, when Guerrero's governor, Héctor Astudillo, suggested the move could help the state's economy and reduce local violence. Despite the drawbacks currently associated with legalization projects in several other countries (Fischer 2017; Jones, Porter & Bishop 2017), calls for opium production to be legalized in Mexico have since gathered pace, backed by former Mexican presidents, influential Mexican think tanks, and even members of the Mexican military. In August 2018 Guerrero's State Congress sent an initiative to the Mexican Senate asking for the legalization of opium production for medical use, which is now being studied by various Mexican government institutions (Congreso del Estado de Guerrero 2018).

The arguments for legalisation are summed up in the Guerrero Congress's bill, which claims that legalized opium would:

- Bring in considerable amounts of money to opium-growing communities.
- Offer tax returns for the government.
- Offer legal jobs for Guerrero inhabitants in both opium farming, and possibly even in pharmaceutical manufacture.
- Provide morphine for a Mexican health infrastructure, which still imports the drug from outside and often suffers severe shortages of such legal opioids.
- Gradually diminish the influence of DTOs and, as a result, the violence endemic to the Guerrero countryside (Congreso del Estado de Guerrero 2018).

In many ways, our research supports these arguments. Many of the peasants now receiving pitiful returns from illicit opium production are more likely to turn to the safer rewards offered by a legal industry. However, unlike many commentators and a range of Mexican politicians and pressure groups, we do not see legalization as a silver bullet for the problems of Mexico's opium-growing regions. First, there are the legal barriers to change, both in Mexico, and within the United Nations system.⁹ Therefore, there can be no unique Mexican response to the issue. Revising international norms on legal opioid production is indispensable to a coherent, comprehensive, long-term improvement of the accessibility to efficient and controlled drugs for the population in need.

Second, the link between legalization and decreasing violence seems overly simplistic. Much of the violence in the Mexican countryside now revolves not solely around competition between traditional DTOs over drugs, but is rather an extension of broader problems including judicial impunity, political competition, police corruption, kidnapping, extortion, illegal logging and mining, and unresolved blood feuds.

Third, comparisons with other legalization schemes do not bode well. When Jamaica legalized the production of medical marijuana in 2015, it was designed as a way to boost marginal rural communities. Yet, the effects have been disappointing. The high cost of acquiring a license as well as other financial and infrastructure problems put many smaller farmers off (Jones, Porter & Bishop 2017).

Fourth, there is considerable disagreement over the possible market for legal opioids in Mexico. More conservative commentators claim that world demand for legal opioids is relatively small and legal production is already outstripping global demand. Currently Mexico imports only 0.7 tons of morphine. This would require only 7 tons of opium to produce. Seven tons is only 0.73% of current Mexican opium production (Human Rights Watch 2014). It could be grown on 321 hectares of land. It would, in short, probably not even fulfil opium production in a single Guerrero village. How, then, would the Mexican government choose which of the nation's many different opium-growing regions should be 'the one' to produce legal morphine? What would happen to the rest of them? What would be done with the remaining 99% of illegal, or legal, opium production? How would the Mexican government deal with the International Narcotics Control Board (INCB) and the current legal system regulating the production of morphine? All these questions need further, in-depth research.

However, other researchers claim that Mexico imports so little morphine because the Mexican medical establishment – like its counterparts in most underdeveloped nations – is reluctant to treat pain effectively

⁹ The three international agreements that stand in its way are the Convención Única sobre Estupefacientes 1961; Convenio sobre sustancias Sicotrópicas 1971; Convención de las Naciones Unidas contra el Tráfico Ilícito de Estupefacientes y Sustancias Sicotrópicas 1988.

with the use of opioids (low- and middle-income countries only have access to 9% of the world's legal morphine) (JIFE 2016). A recent study claims that Mexico actually requires 20 tons of morphine per year to treat sufferers of chronic pain (Aguilar 2018). This would require 200 tons of raw opium, equivalent to 21% of Mexico's current illegal production. It would need 9,265 hectares of poppy fields to produce. But such an analysis presupposes that what the world needs is more, rather than less, users of legal opioids. It could be argued that it was precisely such ideas, pushed by large pharmaceutical companies, that gave rise to the current US fentanyl crisis in the first place (Quinones 2015). Furthermore, the Mexican medical establishment is not necessarily prepared to prescribe and regulate these drugs. Nevertheless, it appears that while legalization of opium for medical morphine production may not be a one-stop solution, it could at least be a start.

Crop substitution and its limits

Mexican media commentators, security experts and politicians also frequently refer to crop substitution programs as a potential 'miracle' solution to Mexico's drug crisis. For example, during the series of presidential debates held in the run-up to the 2018 general election, Andrés Manuel López Obrador, now Mexico's president, suggested that poppy cultivation in Guerrero could be substituted for maize, in order to provide local peasants with an 'honest' way of sustaining themselves and their families, while depriving DTOs of access to the raw materials for heroin production (Moreno 2018).

Such programs have been attempted in many nations battling illicit drug production. Nor is AMLO the first Mexican politician to suggest crop substitution as a 'way out' for the nation's drug-growing peasantry. In 1978, the governor of Sinaloa, Alfonso Calderón, suggested that crop substitution could be used to offset the adverse social, political, and economic effects of drug crop destruction during Operation Condor. Governor Calderón demanded government investment in local mining and forestry programs as alternatives to poppy cultivation, as well as the construction of 'infrastructure that would foster development in the Sierra Madres.' José López Portillo publicly backed this idea during his presidential campaign, but after his election he refused to support crop substitution efforts in key drug-growing regions, due to criticism that such a program would 'reward' peasants for having previously engaged in illegal activity.¹⁰

Throughout the second half of the twentieth century, Mexican federal government agencies, such as the Nacional Indigenous Institute (INI), also carried out other projects designed to encourage rural Mexico's economic development. These were not crop substitution programmes per se, but more general initiatives that sought to create profitable industries in the country's most marginalised regions (including the Sierras of Nayarit and Guerrero). However, the distribution of tractors, fertilizers, fruit trees, and 'improved' seed, and the creation of communal logging, fishing, and tourism cooperatives, was carried out in a top-down manner with little on-the-ground consultation with those whom such projects were designed to benefit. Most equipment and other materials soon ended up in the hands of local political bosses (in many cases the same individuals who today have monopolies on the most profitable aspects of drug production and processing). Thus a lack of political will to implement crop substitution programmes, and the abject failure of other state-led rural development initiatives, did little to improve the lives of the vast majority of Mexico's rural poor, who had little choice but to continue trying to eke out a living through subsistence farming and small-scale poppy cultivation.

In countries where crop substitution programs *have* been implemented, their success has also been limited by one simple fact: illicit drug crops tend to command a higher price, thanks to the laws of international supply and demand, than their legal alternatives. Empirical research also shows that 'achieving economic viability and competitiveness poses major difficulties' for substitution programs, given that 'some agronomically viable licit crops are not economically viable, while others are economically viable but not competitive with licit crops produced elsewhere or with illicit crops' (Farrell 1998).

But even if viable crops are found, and the obstacles to getting these crops to market are solved (often involving significant state investment in transportation infrastructure and marketing), peasants across the world have remained reluctant to give up the cultivation of illicit crops due to 'the consistently higher prices paid for illicit crops by traffickers' (Farrell 1998). For example, despite the Colombian government's investment in intensive coca-substitution programmes since 2016, coca production has actually increased during the same period because 'farmers say they can earn ten times more growing coca than any other crop' (Dennis 2017).

¹⁰ "Lopez Portillo Suggests Campesino Aid as Alternative to Drug Production" 18 May 1976, Central Foreign Policy Files, 1973–1979, RG59, NARA AAD; cf. "FY 1977 Narcotics Control Action Plan." 20 August 1975, Box 20, Bureau of International Narcotics Matters, Country Files, 1970–1978, NARA-CP.

In Mexico, similar, market-driven failures have been observed for the past half-century. In 1993, for example, two-thirds of the nation's 12,000 hectares of opium poppy were forcibly eradicated by the army; but by 1994 the total hectareage of opium poppy had actually increased, as, 'although eradication undoubtedly increases risks and costs, the proximity of the US heroin market appears to have maintained profit margins and ensured continued opium production' (Farrell 1998). In the last year, however, this has changed. The sudden, fentanyl-induced drop in US demand for heroin means that opium poppies no longer represent a profitable business for Mexico's peasantry.

This is especially true in regions such as those featured in the case studies above. Here concerns over opium prices have coalesced with environmental concerns over the decreasing fertility of their lands – in part a result of the army's fumigation campaigns. This has encouraged the overuse of expensive chemical fertilizers for poppy production, eating into local profits even during times of opium-induced economic bonanza, and pushing farmers towards the use of stronger and more dangerous products. Poppy cultivators in many regions have therefore been sucked into a vicious cycle of steadily increasing expenditure and decreasing profits, which, if not halted soon, may damage local lands and water supplies in ways that not only endanger public health, but also undermine the potential success of crop substitution.

Such concerns suggest that a committed programme of crop substitution – if pursued soon and in close consultation with local communities, rather than in the traditional authoritarian, top-down manner – may provide a workable and an environmentally helpful solution to both the Mexican opium crisis, and to the poverty and violence that currently prevails in most opium growing communities.

Conclusions and Policy Perspectives

This article has shown that the poorest and most marginalised regions of Mexico are currently suffering an unprecedented economic and social crisis, caused by the collapse of what was, until recently, the mainstay of local livelihoods: illicit opium production. Legalization and crop substitution – at present the highest-profile solutions to this crisis, and to the issue of illicit opium production in general – should not be conceived of as silver bullets. Mexico's capacity for opium production greatly exceeds the country's demand for legitimate medical use, which suggests that the legalization of opium for medical use in Mexico would not provide adequate demand to offset the economic losses suffered by current producers. Likewise, given the problems faced by crop substitution programmes in other countries today, such a policy would be unable to fully compensate for these losses.

Furthermore, the reduction of opium production will not inevitably lead to a stable and lasting peace in rural Mexico. The nation's DTOs are nothing if not adaptable to change. Over the past decade they have diversified widely. And in the coming years, they may continue to dominate poppy-growing regions via their control of other local industries, including illegal logging, illegal mining, or the production of synthetic drugs.

Yet despite these concerns, both legalisation and crop substitution, if properly researched and managed, could be introduced in Mexico's former opium production zones both cheaply and relatively effectively. This would require the Mexican government and international aid agencies to recognise that the situations in Guerrero, Nayarit, or Sinaloa differ significantly from each other, and to construct local knowledge in order to offer adequate answers to a wide array of challenges. This would entail commitment to multiple surveys of the viability of crop substitution in one or more poppy-growing areas, in combination with serious consultation with local communities on issues including sustainability, market stability, transport, and soil-, altitude-, climate-, and water-suitability, and taking into account experience and best practices from other countries facing comparable problems.

Similarly, the Mexican state should also seriously consider recent proposals to legalize opium production for the pharmaceutical industry, while recognising that legalisation would only solve one part of the issue, since Mexican demand for legal opioids is substantially lower than the country's current illegal production. Such a solution would therefore have to be articulated both at the national and international level, in order to tackle supply and demand simultaneously. But both legalisation and crop substitution, taken in combination with other, broader security policies, and a comprehensive, long-term economic development agenda, would serve as important first steps in tying local farmers to licit international markets, in the process loosening the grip of DTOs on the country's most marginalised regions. If successful, Mexico's opium crisis could constitute a watershed in the long-running efforts of the Mexican government and its national and international partners to integrate these areas into the country for good.

Finally, our article aims at opening questions for further research in Mexico regarding illicit crops. The criminalization of poppy producers by governments, in Mexico and in other key producing countries,

has decisive political, economic and social consequences that also influence the way academics produce research, or can't produce research on these issues. Mexico is usually left out of research on violence, development, and illicit economies. With this paper, we reaffirm the need for ethnographic research in order to produce independent, reliable, scientific data that will be decisive in discussing experts and 'grey literature' narratives on illicit crop production, drug policy debates, and development programs.

Competing Interests

The authors have no competing interests to declare.

References

Aguilar, R. 2016. 'Amapola sostiene a 1,287 poblados; Guerrero, monarca de la heroína.' *Excelsior*, 20 April. Available at <https://www.excelsior.com.mx/nacional/2016/04/20/1087674> [Last accessed 22 July 2019].

Aguilar, R. 2018. 'Falta morfina en México.' *El Economista*, 23 October. Available at <https://www.economista.com.mx/opinion/Falta-morfina-en-Mexico-20181024-0012.html>.

Astorga, L. 2001. *Drogas sin fronteras. Los expedientes de una guerra permanente*. México: Grijalbo.

Bloomberg Editorial. 2018. 'The Opioid Crisis is now a Fentanyl Crisis.' *Bloomberg Radio*, 10 September. Available at <https://www.bloomberg.com/news/audio/2018-09-10/the-opioid-crisis-is-now-a-fentanyl-crisis-editorial> [Last accessed 22 July 2019].

Ciccarone, D. 2017. 'Fentanyl in the US heroin supply: A rapidly changing risk environment.' *International Journal of Drug Policy*, 46: 107–111. DOI: <https://doi.org/10.1016/j.drugpo.2017.06.010>

Collins, J. 2015. *Regulations and prohibitions: Anglo-American relations and international drug control, 1939–1964*. PhD thesis, London School of Economics and Political Science (LSE).

CONAPO (Consejo Nacional de Poblacion). 2016. *Datos abiertos de los indices de marginacion*. Available at http://www.conapo.gob.mx/es/CONAPO/Datos_Abiertos_del_Indice_de_Marginacion [Last accessed 22 July 2019].

Congreso del Estado de Guerrero. 2018. *Iniciativa Con Proyecto de Decreto que Adiciona y Reforma Diversas Disposiciones de la Ley General de Salud, delCodigo Federal Penal, y delCodigo Nacional de Procedimientos Penales*. 17 August.

DEA (Drug Enforcement Administration). 2017. *Factsheet: Fentanyl*. Available at <https://www.dea.gov/factsheets/fentanyl> [Last accessed 22 July 2019].

DEA (Drug Enforcement Administration). 2018. *National Drug Threat Assessment*. Available at <https://www.dea.gov/sites/default/files/2018-11/DIR-032-18%202018%20NDTA%20final%20low%20resolution.pdf> [Last accessed 22 July 2019].

Dennis, C. 2017. 'Colombia's New Crop Substitution Plan Facing Old Obstacles.' *Insight Crime*. Available at <https://www.insightcrime.org/news/analysis/colombia-new-crop-substitution-plan-facing-old-obstacles-report/> [Last accessed 22 July 2019].

Fairbairn, N, Coffin, PO and Walley, AY. 2017. 'Naloxone for heroin, prescription opioid, and illicitly made fentanyl overdoses: Challenges and innovations responding to a dynamic epidemic.' *International Journal of Drug Policy*, 46: 179. DOI: <https://doi.org/10.1016/j.drugpo.2017.06.005>

Farrell, G. 1998. 'A Global Empirical Review of Drug Crop Eradication and United Nations Crop Substitution and Alternative Development Strategies.' *Journal of Drug Issues*, 28(2): 395–436. DOI: <https://doi.org/10.1177/002204269802800207>

Fischer, B. 2017. 'Legalisation of non-medical cannabis in Canada: Will supply regulations effectively serve public health?' *The Lancet*, 1 December. DOI: [https://doi.org/10.1016/S2468-2667\(17\)30213-X](https://doi.org/10.1016/S2468-2667(17)30213-X)

Gilbert, M and Dasgupta, N. 2017. 'Silicon to syringe: Cryptomarkets and disruptive innovation in opioid supply chain.' *International Journal of Drug Policy*, 46: 160–167. DOI: <https://doi.org/10.1016/j.drugpo.2017.05.052>

Gobierno de México. 2017. *Anuario Estadístico de la Producción Agrícola*. Available at <https://nube.siap.gob.mx/cierreagricola/> [Last accessed 22 July 2019].

Goodnough, A. 2019. 'In Cities Where It Once Reigned, Heroin Is Disappearing,' *New York Times*, 18 May. Available at <https://www.nytimes.com/2019/05/18/health/heroin-fentanyl-deaths-baltimore.html> [Last accessed 27 July 2019].

Greenberg, JB, Browning-Aiken, A, Alexander, WL and Weaver, T. (eds.) 2012. *Neoliberalism and Commodity Production in Mexico*. Boulder: University Press of Colorado.

Heath, H. 1981. 'Mexican Eradication Campaign.' (MA thesis, California State University).

Human Rights Watch. 2014. *Asegurando el derecho a los cuidados paliativos en México*. Available at <https://www.hrw.org/es/report/2014/10/28/cuidar-cuando-no-es-posible-curar/asegurando-el-derecho-los-cuidados-paliativos-en> [Last accessed 22 July 2019].

INEGI. 2017, 2018. *Defunciones por homicidios*. Available at <https://www.inegi.org.mx/sistemas/olap/proyectos/bd/continuas/mortalidad/defuncioneshom.asp?s=est> [Last accessed 23 September 2019].

INEGI (Instituto Nacional de Estadística y Geografía). 2015. *Anuario Estadístico y Geográfico de Guerrero*. Available at http://internet.contenidos.inegi.org.mx/contenidos/productos/prod_serv/contenidos/espanol/bvinegi/productos/nueva_estruc/anuarios_2015/702825076900.pdf [Last accessed 22 July 2019].

Jaramillo, J, Yuñez, A and Serrano, V. 2015. 'Spatial Integration of Mexico-U.S. Grain Markets.' *EconoQuantum*, 12(1). Available at <https://pdfs.semanticscholar.org/3343/fdc00bc64e2df78a49b4942f62b17320cefe.pdf>.

Jenkins, P. 1999. *Synthetic panics: The symbolic politics of designer drugs*. New York: New York University Press

JIFE (Junta Internacional de Fiscalizacion de Estupefacientes). 2016. *Disponibilidad de sustancias sometidas a fiscalización internacional: Garantizar suficiente acceso a esas sustancias para fines médicos y científicos Indispensables, con disponibilidad adecuada y sin restricciones indebidas*. Available at https://www.incb.org/documents/Publications/AnnualReports/AR2015/Spanish/Supplement-AR15_availability_Spanish.pdf.

Jones, S, Porter, R and Bishop, C. 2017. 'The implementation of medical ganja in Jamaica. *International Journal of Drug Policy*, 42: 115–117.

Kamstra, J. 1974. *Weed: Diary of a Dope Smuggler*. London: Harper & Row.

Lohmuller, M. 2016. 'Agricultores cambian café por amapola en centro de heroína en México.' *Insight Crime*. Available at <https://es.insightcrime.org/noticias/noticias-del-dia/agricultores-cambian-cafe-amapola-centro-heroina-mexico/> [Last accessed 22 July 2019].

Macey, B. 2018. *Dopesick: Dealers, Doctors and the Drug Company that Addicted America*. New York: Apollo.

Márquez, S, Khalil, A, Ayala, A and Almaguer, G. 2014. 'Situación y perspectivas de la producción de maíz en México.' In: Schwentesius, R and Ayala, A (eds.), *Seguridad y soberanía alimentaria en México, análisis y propuestas de política*. Inifap/Plaza y Valdes.

McDonald, J. 2005. 'The Narcoeconomy and Small-town, Rural Mexico.' *Human Organization*, 64(2). DOI: <https://doi.org/10.17730/humo.64.2.ln16fx6k6wahxluy>

Molina, H. 2019. 'Aumentan cultivos de amapola.' *El Economista*, 22 January. Available at <https://www.economista.com.mx/politica/Aumentan-cultivos-de-amapola-20190122-0005.html> [Last accessed 24 September 2019].

Moreno, L. 2018. 'En Guerrero, sembrar enervantes es más rentable que maíz: productores.' *Milenio*, 22 May. Available at <http://www.milenio.com/negocios/guerrero-sembrar-enervantes-rentable-maiz-productores> [Last accessed 22 July 2019].

Neuman, S. 2018. 'Dozens Overdose In Connecticut Park On Tainted Synthetic Marijuana.' *NPR*, 16 August. Available at <https://www.npr.org/2018/08/16/639133355/dozens-overdose-in-connecticut-park-on-tainted-synthetic-marijuana?t=1541519778603> [Last accessed 29 October 2018].

NIDA (National Institute of Drug Abuse). 2019. *Overdose Death Rates*. <https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates> [Last accessed on 22 July 2019].

NNIC (National Narcotics Intelligence Consumers Committee). 1984. *Narcotics Intelligence Estimate*.

ONDCP (US White House Briefing). 2018. *New Annual Data Released by White House Drug Policy Office Shows Record High Poppy Cultivation and Potential Heroin Production in Mexico*. Available at <https://www.whitehouse.gov/briefings-statements/new-annual-data-released-white-house-drug-policy-office-shows-record-high-poppy-cultivation-potential-heroin-production-mexico/> [Last accessed 22 July 2019].

Ospina, G, Hernandez Tinajero, J and Jelsma, M. 2018. *Poppies, Opium and Heroin, Production in Colombia and Mexico* (Transnational Institute). Available at https://www.tni.org/files/publication-downloads/poppiesopiumheroin_13042018_web.pdf [Last accessed on 5 September 2019].

Padgett, H. 2015. *Guerrero. Los hombres de verde y la dama de rojo. Crónicas de la Nación Gomera*. Mexico City: Tendencias.

Padgett, H. 2018. Personal email communication, 3 November.

- Pardo, B.** 2018. *Evolution of the US Overdose Crisis: Understanding China's Role in the Production and Supply of Synthetic Opioid*. Santa Monica, California, United States: RAND Testimonies. Available at https://www.rand.org/content/dam/rand/pubs/testimonies/CT400/CT497/RAND_CT497.pdf [Last accessed 22 July 2019].
- Quinones, S.** 2015. *Dreamland: The True Tale of America's Opium Epidemic*. New York: Bloomsbury.
- Schneider, E.** 2008. *Smack, Heroin and the American City*. Philadelphia: University of Pennsylvania Press. DOI: <https://doi.org/10.9783/9780812203486>
- UNODC (United Nations Office on Drugs and Crime).** 2000–2018. *World Drugs Report* (Most years are collected together in UNODC, 'Los opioides, cerca de ser la mayor amenaza del consumo de drogas') Available at <http://www.unodc.org/unodc/es/frontpage/2018/June/cocaine-and-opium-production-worldwide-hit-absolute-record-highs---major-threat-to-public-health-says-un-study.html?ref=fs4> [Last accessed 22 July 2019].
- US Senate Staff Report.** 2018. Committee on Homeland Security and Governmental Affairs; Permanent Subcommittee on Investigations. *Combatting the Opioid Crisis: Exploiting Vulnerabilities in International Mail*. Washington, D.C., United States.
- Woo, A.** 2018. 'Nearly all drugs sold as heroin in Vancouver contain fentanyl, study finds.' *Globe and Mail*, 31 July. Available at <https://www.theglobeandmail.com/canada/british-columbia/article-nearly-all-street-drugs-in-vancouver-contain-fentanyl-study-finds/> [Last accessed 29 October 2018].

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