MARIJUANA PRODUCTION IN CALIFORNIA

California Produces More Marijuana than Mexico

California seized more Marijuana than was seized at the U.S. – Mexico Border

California's Law Enforcement Eradicated More Marijuana than was produced in Canada

California May Supply 3/4th of all the Marijuana for US Consumers

Introduction: "It's about time law enforcement got as organized as organized crime," said the former Mayor and U.S. Attorney in New York City.[i] Neither the Citizens of California nor many law enforcement officials fully comprehend the ominous organized crime system that operates secretly in this State producing cannabis. This document is a collaborative effort of the four California HIDTA programs.

One of the roles of the High Intensity Drug Trafficking Area (HIDTA) program is to gather and analyze data pertaining to all facets of the illicit drug trade. These reports generally fall under the nature of a "Strategic Intelligence" document and often are used for the formulation of policies and resource allocations. Each of the 32 HIDTAs produces such a document and an annual National Drug Threat Assessment is produced by the U.S. Department of Justice. The National Drug Threat Assessment[ii] is a precursor to the National Drug Control Strategy which is used to implement drug demand reduction, prevention and treatment and enforcement programs. The National Drug Threat Assessment normally summarizes past events and circumstances and presents an Outlook for the future. It is a conservative picture of what has and what might happen.

This document is intended to be a realistic wake-up call to the enormity of the marijuana production problem in California. It is also intended to stimulate a renewed focus against the dangers and hazards associated with the production; sale and use of marijuana.

Marijuana Production Trends: This document will show that there are massive amounts of marijuana produced in California. There is no system or method that gives an accurate and reliable estimate of the cannabis production in any given region of the world including cannabis produced in the United States. However, we do have reliable information about the number of plants that are eradicated annually in this country and state. The data shows that the marijuana production problem is increasing. For example, during 2005 over 4.8 million marijuana plants were eradicated in the United States—many more than any previous year. During 2006, over 5.5 million plants were eradicated. Over 6.2 million plants were eradicated in 2007. During 2008, law enforcement agencies reported that they seized 8,013,308 marijuana plants. And in calendar

year 2009, 10.3 million cannabis plants were eradicated throughout the country. Nationally, marijuana production increased nearly 200 per cent in four years.

A greater increase applies to California where in 2006 authorities eradicated 2,642,352 plants. In 2007 there were 4,961,313 marijuana plants seized. During 2008, there were 5,432,053 plants eradicated and in 2009 the total eradication was 7,519,580 plants, nearly a 300 percent increase in 4 years.[iii]

While there is no way of determining what percentage of domestically produced marijuana was actually harvested and distributed throughout this country, it is logical to deduce that a substantial quantity was harvested and distributed because drug trafficking organizations (DTOs) have expanded their areas of operation and the size of their grows.

Computation Methodology: The United Nations Office on Drugs and Crime in its World Drug Report (WDR 2009) reports there are several methods used to estimate drug production. The first is self reporting by a Country's Government on the hectares under cultivation or amount eradicated. Surveillance over flights and satellite estimations may provide verification in some instances. The second method is based on seizures of cannabis and then a formula is applied to this data. The third method is to identify the number of users in a country and calculate the demand and production by applying a formula that they present in the WDR. The results are generally presented in a data range since this process is not precise.

The CVC HIDTA applied the methods and formulas offered by the UNODC. To buttress these computations we also relied upon the evidence and methods presented by regional experts from California who "know best" about the subject of cannabis cultivation. All sources and methods used by the CVC HIDTA are listed in the endnotes. It is worth noting from preliminary reports that the 2010 marijuana growing season is expected to result in another record eradication count.

United States Marijuana Production in 2009 Exceeded Mexico's: During 2009 law enforcement agencies reported to the Drug Enforcement Administration Domestic Cannabis Suppression and Eradication Program (DC/SEP) that they seized 10.3 million[iv] marijuana plants from indoor and outdoor grow sites. But if that much was seized by the police, what was grown that they missed? The Central Valley CA HIDTA researchers applied a formula used in the United Nations World Drug Report 2009[v] to estimate the 2009 gross marijuana (plant) production in the United States[vi]. The UNODC estimates that law enforcement around the world only seizes 10-20 percent of the drugs produced.[vii] Using a reasonable midpoint figure of 15% seized by law enforcement, the estimated total marijuana produced in the United States during 2009 was 69,290,684 plants. In order to ascertain the weight of these plants when removed from their grow sites, we applied the Gaffney formula.[viii] The result is that **the U.S. 2009 production of marijuana was 69,291 Metric Tons (MT)[ix] while Mexico only produced 29,025 MT-Metric Tons.[x]**

This differential occurred even though the U.S. Department of State reported that in 2009 marijuana production in Mexico increased 35 percent from 8,900 Hectares (HA) in 2008 to 12,000 HA in 2009. The Government of Mexico (GOM) reported their marijuana (bulk) seizures declined to 1,385 MT. The GOM also reported that it eradicated 14,135 HA of marijuana during 2009. [xi]

California Produced More Outdoor Grown Marijuana in 2009 than Mexico: ***(Method 1-Seizure Based)*** Mexico's 29,025 MT production was eclipsed by California's cannabis output of ***49,105 Metric Tons*** in 2009. How was the California output computed? To determine the California output potential we used different (published) methods in an attempt to determine the accuracy of these estimations.

First we began with the 2009 DC/SEP actual seizures of outdoor marijuana, 7,365,760 plants which weighed 5,140 MT[xii] We applied the WDR median percentage (15%) and calculated that ***49,104,576*** marijuana plants was the production potential for California in 2009. Applying the Gaffney formula to determine metric tons[xiii], this equates to a gross weight of ***49,105 MT*** of marijuana possibly produced in California during 2009.

California 2009 Production, United Nations Model *(Method 2-Yield p/hectare)*: The UNODC World Drug Report on page 93 (footnote) noted that "the typical yield for outdoor cannabis varies between 470kg/ha without irrigation to 5,000 kg/ha in well-tended gardens, with figures around 2,000 kg/ha typical for the situation in the U.S.A. *(as identified through the analysis of data from court cases.)"*[xiv]

We first computed the number of plants yielded per acre. Using Regional Experts, we first estimated an average production rate of 632 plants per acre (a very conservative amount) in California based on averaging of numbers presented in documents and testimony of experts in the land management business in California. Four expert sources were relied upon for their estimates of marijuana plants per acre; Gaffrey[xv], Demetry[xvi], Krogen[xvii], US Forest Service[xviii] and findings from Whiskeytown.[xix]

Using the previous maximum cannabis output of ***49,104,576*** plants and then dividing by 632 provides the acres under cultivation. The result is that there were 77,697acres of California's land used to grow outdoor marijuana in 2009. This acreage equates to 31,029 Hectares. Application of the UNODC World Report estimated output of 2,000 kg/ha (for U.S. grown marijuana) gives an estimated minimum potential output of 28,189 Metric Tons for California during 2009. But is the WDR figure accurate and current? We believe this is too low and inaccurate a figure because the Mexican Drug Trafficking Organizations (DTOs) in California have refined their production methods.

A region-specific method of computing marijuana yield may be more accurate and confirm the range of previous estimations. It is based on observations of marijuana grow sites during reclamation activities. The Executive Director of the High Sierra Volunteer Trail Crew is an

expert in the reclamation of marijuana grows sites. He and his volunteers support efforts by the Department of Agriculture (U.S. Forest Service) and the Department of the Interior (National Park Service and Bureau of Land Management) to clean up and restore the Sierra Mountain areas devastated by marijuana growers. His information is current and formed through reclaiming hundreds of marijuana grow sites. Mr. Shane Krogen estimates that each acre produces an average of 1,600 cannabis plants.[xx] This is the closest figure to the WDR estimated production of 2,000 plants per acre in the United States. **Applying the Krogen Formula (1,600 plants per acre) to the possible acreage under cultivation (77,697 acres), there could be 124,315,200 marijuana plants grown in the state. This amounts to 124,315 MT before processing for sale takes place.**

The Krogen formula may yield a more realistic amount rather than applying the following UNODC maximum output formula which follows. The highest potential amount of cannabis produced in the state comes from applying a U.N. formula of 5,000 kg/ha to the Mexican DTOs operating grow sites in California. This high a yield is conceivably possible because the Mexican DTOs in California have an ideal climate, use experienced growers, use select seeds or cloned plants and apply many pesticides, rodentcides and fertilizers that are commonly found, in the growing locations.

By applying the UNODC 5,000kg/ha to the 77,697 possible hectares under cultivation, it is possible that 155,394,000 Kgs of cannabis or 341,866,800 gross pounds were produced. This equates to a total potential yield of ***155,042 Metric Tons*** of marijuana grown in California. Through the application of these different formulas, we can speculate on the range of cannabis production figures for California as:

1. **LOW YIELD: Uses the conservative World Drug Report production formula where law enforcement only seizes 15% of all marijuana estimated California's marijuana output for 2009 at 49,105 MT.**
2. **MEDIUM YIELD: The Krogen formula of 1,600 plants per acre (1000 plants p/.625 acre) produced a potential statewide output of 124,315 MT**
3. **HIGH YIELD: Applying the WDR kilogram yield per hectare (5,000 kg/ha), the greatest potential output for California in 2009 is 1,155,042 MT.**

The probable production was somewhere near midpoint of these amounts. The actual 2009 plant seizures totaled 5,140 MT.

How Much Area was used to Grow Marijuana in California? There are an estimated 77,697 acres (121 square miles) used throughout California to grow cannabis. For every acre that is "Impacted" (the actual growing area) there are another 2 to 10 acres that are considered "Constrained." The Constrained area is that which is marked by trails, waterlines, campsites and other areas trampled by the growers. The City of Sacramento is 97 square miles in size and the amount of area used for growing marijuana exceeds the size of the state's Capital city.

California Marijuana Plant Seizures Exceeded Canada's Production and U.S. MX Border Seizures: According to the UNODC report citing Public Safety Canada 2009, Canada produced between 1,399 and 3.498 Metric Tons of cannabis.[xxi] Law Enforcement in California seized 7,365,760 plants which equates to 5,140 metric tons. California has about 5 million more residents than Canada.

More Marijuana was Eradicated in California Than was Seized at the US-Mexico Border: There were 1,489,643 kilograms of cannabis seized during 2009 at the U.S.-Mexico border.[xxii] This amounts to 1,486 Metric Tons of cannabis, about 1/3rd of what was eradicated in California (5,140 MT).

Marijuana Smokers Don't Use the Entire Plant: Marijuana smokers prefer the flowering Sensimilla buds of the female cannabis plant. This is the only product of the cannabis plant that the DTOs in California produce. The rest of the plant is discarded or used to make hashish oil or added as a bulk/cosmetic filler as with Mexican marijuana. For statistical purposes, the HIDTA program universally assigns an average weight of one pound of useable marijuana per plant. Using the Krogen Formula of California producing 124,315,200 plants during 2009, this would equate to 124,315,200 pounds of useable marijuana. Divide that number by 2,205 (pounds per Metric Ton) and California would produce 56,379 Metric Tons of smoking marijuana, not simply the entire plant's weight.

California Supplies the Nation's Marijuana Smokers: Why do the drug trafficking organizations grow so much marijuana in California? The answer is simply the demand by users and unrestrained profits. The WDR contains a method for determining what the size of the cannabis demand might be and is presented in the following chart.

CANNABIS CONSUMPTION IN THE U.S.

Past Year # Users		Total in US	**25,768,000** Results from the 2008 National Survey on Drug Use and Health; SAMSA		
	USE	AMOUNT	POPULATION	USEAGE (GMS)	USEAGE (LBS)
Casual Users (45%)	4X per year*	.6 grams p/year	11,595,600	6,957,360	15,338
Regular users (41%)	100 X p/ears*	15 grams p/year	10,564,880	158,473,200	349,375
Daily Users (9%)	4 joints p/day*	320 grams p/year	2,319,120	8,245,760,000	18,178,884
Chronic Users (4%)	10 joints p/day*	1,825 grams p/yr	1,030,720	47,026,600,000	103,676,448
					122,220,046 POUNDS

*Source: UN World Drug Report 2009

Annual US Demand for Cannabis	**55,429** METRIC TONS
California net production	43,965 METRIC TONS
Possible % of National Demand supplied by California*	**79%**

* CA Max Production	49105 MT
Less Seized	5140 MT
Net to Markets	43965 MT

The Demand for Marijuana: Marijuana is the most commonly used illicit drug in the United States. According to the National Survey on Drug Use and Health (NSDUH), in 2007, 14.4 million Americans aged 12 or older used marijuana at least once in the month prior to being surveyed, which was similar to the 2006 rate. About 6,000 people a day in 2007 used marijuana for the first time, 2.1 million Americans. But the demand for marijuana increased in 2008. In May of 2010 the National Institute on Drug Abuse (NIDA) reported that nearly 26 million Americans (10%) aged 12 or older reported abusing marijuana within the past year and more than 4 million met the criteria for abuse or dependence upon marijuana.

According to NIDA's 2008 Monitoring the Future study, while marijuana use among 8th, 10th, and 12th graders showed a consistent decline starting in the mid-1990s; this decline has stalled in the past few years. Past month use was reported by 6.5% of 8th graders, 15.9% of 10th graders, and 20.6% of 12th graders, or 1 in 5 seniors. Thus, among 12th graders 5.2% are daily marijuana users, a rate unchanged since peak years in 2002 and 2003 (6%). (www.drugabuse.gov)

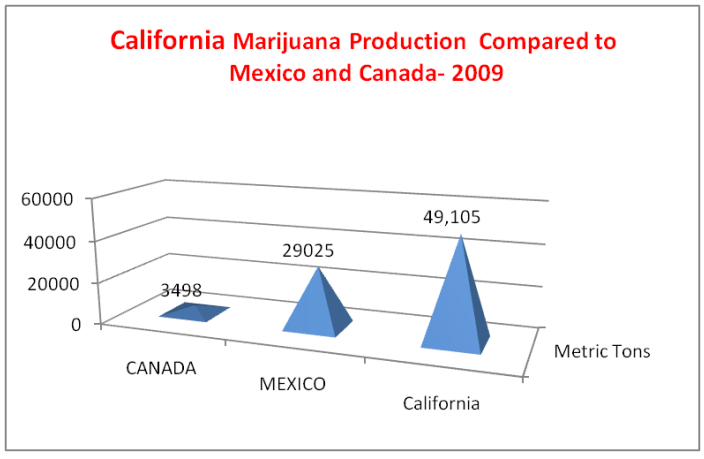
Long-term marijuana use can lead to addiction; that is, people use the drug compulsively even though it interferes with family, school, work, and recreational activities. According to the National Survey on Drug Use and Health, in 2008 of the estimated 7 million Americans classified with dependence on or abuse of illicit drugs, 4 million were dependent on or abused marijuana. In 2007, 15.8% of people entering drug abuse treatment programs reported marijuana as their primary drug of abuse (61% of those under 15), representing nearly 288,000 treatment admissions. Along with craving, withdrawal symptoms such as irritability, sleeping problems, and anxiety can make it difficult for long-term marijuana smokers to quit. Past research has shown that approximately 9% of people who used marijuana may become dependent. The risk of

addiction goes up to about 1 in 6 among those who start using as adolescents, and 25-50% of daily users.[xxiii]

Older Adults Abuse Marijuana: The NSDUH Report published in December 2009 reported that an estimated 4.3 million adults aged 50 or older, or 4.7 percent of adults in that age range, had used an illicit drug in the past year based on data from 2006 to 2008.[xxiv] Marijuana use was more common than nonmedical use of prescription-type drugs for adults aged 50 to 54 and those aged 55 to 59 but among those aged 65 or older nonmedical use of prescription-type drugs was more common than marijuana use.

Outlook and Conclusion: The data presented herein may seem confusing when first read. Except for the known seizure amounts, we have presented only estimations although we attempted to use authoritative sources, all of which are documented for the reader. We attempted to ascertain the scope of cannabis growing through varying methods and the application of different formulas. With each methodology, it is apparent that it is an enormous problem but the question lingers, "how much marijuana is grown in California?" Our best estimate is that the 2009 gross outdoor marijuana production in California was around 49,104,576 plants or 49,105 Metric Tons.

In reality, the marijuana cultivation business is done in secret mostly by well-organized criminal enterprises and will remain so because of the billions of dollars this activity generates. The outlook is clear – expect greater marijuana production each year until market equilibrium is reached; that is when demand equals supply. Last year, 2009, there was a 7% increase in plants eradicated over 2008 (7,365,760) and 2010 is projected to have an equal increase.



ENDNOTES:

[i] Rudy Giuliani. (n.d.). BrainyQuote.com. Retrieved April 28, 2010, from BrainyQuote.com Web site: http://www.brainyquote.com/quotes/quotes/r/rudygiulia113506.html
[ii] National Drug Threat Assessment 2010, National Drug Intelligence Center, www.justice.gov/ndic
[iii] Drug Enforcement Administration, DC/SEP Program, www.justice.gov/dea/programs/marijuana.htm.
[iv] Ibid

[v] United Nations Office on Drugs and Crime, World Drug Report 2009, www.unodc.org/documents/wdr.
[vi] The gross weight and production as reported in the UNODC includes the cannabis plant's flowing buds (preferred by users) the stalks, stems and leaves. Mexico produced marijuana generally includes the leaves, stems, and seeds as it is found in U.S. markets. The U.S. eradication plant count includes all the plant's component parts. For drug market analysis purposes, the HIDTA program assigns an average of one pound of smoking cannabis per plant.
[vii] Ibid, page 91
[viii] 3,000,000 marijuana plants equal 3,000 MT (2 lbs per plant). Expert opinion provided in Testimony by Mr. Art Gaffrey, Forest Supervisor, Sequoia National Forest, California Before the Subcommittee on Criminal Justice, Drug Policy and human Resources and the Subcommittee on Energy Policy, Natural Resources and Regulatory Affairs, Committee on Government Reform, United States House of Representatives, October 10, 2003.
[ix] Ibid
[x] National Drug Threat Assessment published 2010 on page 37 lists Mexico produced 21,500 MT of marijuana in 2008. A 35% increase for 2009 would yield 29,025 MT.
[xi] International Narcotics Control Strategy Report, US Department of State, March 1, 2010, page 433 & 434.
[xii] 2008 Domestic Cannabis/Suppression Enforcement Program (DC/SEP), U.S. Department of Justice, Drug Enforcement Administration
[xiii] Op Cit, Gaffrey formula, 3,000,000 plants equals 3,000 MT
[xiv] Underline emphasis writers
[xv] Op Cit, Gaffrey testified before Congressional Committees in 2003 that 10 acres typically produced 2000 to 3000 marijuana plants; a mid point was selected at 2,500 plants hence 250 plants per acre.
[xvi] Estimated 48,000 plants eradicated from 115 acres, Restore Hydrology and Soil Disturbance in Marijuana Gardens of SEKI and WHIS, a unpublished draft by Athena Demetry, Restoration Ecologist at Sequoia and Kings Canyon National Parks, March 2003.
[xvii] One acre yields about 1,600 plants, (1000 plants p/.625 acre) estimation from Mr. Shane Krogen, Executive Director, High Sierra Trail Crew (grow site restoration experts), April 2010.
[xviii] U.S. Forest Service, Region 5 (California) Report entitled "Controlled Substance Enforcement Activity on NFS Lands, dated 3-18-10.
[xix] Op Cit, Demetry, Eradication of marijuana gardens in Whiskeytown National Recreational Area, 2003.
[xx] Op Cit, Krogen
[xxi] Op Cit. (Highest estimated production for CN,2008), World Drug Report, UNODC, 2009
[xxii] Op Cit. National Drug Threat Assessment 2010, (data through 12-1,09) pg 37.
[xxiii] The NSDUH Report, Office of Applied Studies, Substance Abuse and Mental Health Services Administration, 2008
[xxiv] Ibid