

Marijuana Production in the United States (2006)

By Jon Gettman, Ph.D.

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Executive Summary

1) Marijuana is the largest cash crop in the United States, more valuable than corn and wheat combined. Using conservative price estimates domestic marijuana production has a value of \$35.8 billion. The domestic marijuana crop consists of 56.4 million marijuana plants cultivated outdoors worth \$31.7 billion and 11.7 million plants cultivated indoors worth \$4.1 billion.

2) The top ten marijuana producing states are California, Tennessee, Kentucky, Hawaii, Washington, North Carolina, Florida, Alabama., West Virginia, and Oregon. Five states (California, Tennessee, Kentucky, Hawaii and Washington) had marijuana crops worth over \$1 billion.)

3) Despite intensive eradication efforts domestic marijuana production has increased ten fold over the last 25 years from 1,000 metric tons (2.2 million pounds) in 1981 to 10,000 metric tons (22 million pounds) in 2006, according to federal government estimates.

4) Marijuana is the top cash crop in 12 states, one of the top 3 cash crops in 30 states, and one of the top 5 cash crops in 39 states. The domestic marijuana crop is larger than Cotton in Alabama, larger than Grapes, Vegetables and Hay combined in California, larger than Peanuts in Georgia, and larger than Tobacco in both South Carolina and North Carolina.

5) From 2001 to 2005 federal and state eradication programs eradicated an average of 33,033 outdoor cultivation sites per year and an average of 2,701 indoor marijuana grow-rooms per year. From 1982 to 2005 the Drug Enforcement Administration's Domestic Cannabis Eradication/Suppression Program (DCESP) eradicated over 103 million cultivated marijuana plants, an average of 4.3 million cultivated plants a year over this 24 year period.

6) The ten-fold growth of production over the last 25 years and its proliferation to every part of the country demonstrate that marijuana has become a pervasive and ineradicable part of the national economy. The failure of intensive eradication programs suggests that it is finally time to give serious consideration to marijuana's legalization in the United States.

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Introduction

According to US Government estimates domestic marijuana production has increased ten fold over the last 25 years from 1,000 metric tons (2.2 million pounds) in 1981 to 10,000 metric tons (22 million pounds) in 2006. The ongoing proliferation of marijuana cultivation places it beyond the scope of law enforcement capabilities to control and reduce the availability of marijuana to teenagers and young children under existing public policy.

Using conservative price estimates derived from federal surveys, domestic marijuana production has a value of \$35.8 billion, more than corn and wheat combined, easily making it America's largest and most lucrative cash crop.

Based on production estimates derived from marijuana eradication efforts from 2003 to 2005 marijuana is the top cash crop in 12 states, one of the top 3 cash crops in 30 states, and one of the top 5 cash crops in 39 states. The domestic marijuana crop is larger than Cotton in Alabama, larger than Grapes, Vegetables and Hay combined in California, larger than Peanuts in Georgia, larger than Tobacco in both South Carolina and North Carolina, larger than Hay, Tobacco, Corn and Soybeans combined in Kentucky, and larger than the top ten crops combined (Soybeans, Hay, Cotton, Corn, Tobacco, Vegetables, Wheat, Cottonseed, Sorghum and Apples) in Tennessee.

Illicit marijuana cultivation provide considerable unreported revenue for growers without corresponding tax obligations to compensate the public for the social and fiscal costs related to marijuana use.

As America's federal, state, and local governments strive to fund important services such as transportation, education, law enforcement and homeland security untaxed and unregulated domestic marijuana cultivation and distribution remains both an increasing challenge to policymakers and an untapped source of revenue for legislatures.

Twenty five years of aggressive law enforcement, led by the Drug Enforcement Administration's (DEA) Domestic Cannabis Eradication/Suppression Program (DCESP), underscore the government's inability to control marijuana cultivation and marijuana use in the United States. From 1982 to 2005 DCESP has eradicated over 103 million cultivated marijuana plants, an average of over 4 million plants per year. [1]

Contemporary marijuana policy is typified by the DCESP program, particularly through its attempt to suppress marijuana use and cultivation, a word that literally means to put an end to the activities of a person or body of persons; to do away with by authority; to abolish, stop the practice, to vanquish or subdue; crush; to reduce or eliminate. [2] The DCESP has been unable to achieve any of these objectives with regard to marijuana cultivation; indeed under current policies marijuana cultivation has thrived in the United States.

Three 'tip of the iceberg' revelations over the last 25 years indicate the lack of success of this policy of suppression.

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- 1) In 1982 the DEA's report on the DCESP program noted that "the program shows that in 1982, 38% more domestic marihuana (sic) has eradicated than was previously believed to exist." [3]
- 2) In 2002 the National Survey on Drug Use and Health revised its data collection procedures and increased their estimate of annual marijuana users from 21.1 million (as reported in the 2001 survey results) to 25.7 million. [4]
- 3) After reporting from 1998 to 2000 that domestic marijuana production was 3,500 mt (7.7 million pounds) [5] the Office of National Drug Control Strategy reported in February 2003 that "more than 10,000 metric tons [mt] of domestic marijuana and more than 5,000 mt of marijuana cultivated and harvested in Mexico and Canada— [is] marketed to more than 20 million users." [6]

This latest estimate of domestic marijuana production in excess of 10,000 mt was published in several government reports.

The 2002 International Narcotics Control Strategy Report (INCSR), issued by the US Department of State on March 1, 2003, stated:

"Marijuana production and consumption is a serious problem in many countries—including in the United States. More than 10,000 metric tons (MT) of domestic marijuana and more than 5,000 metric tons of marijuana is cultivated and harvested in Mexico and Canada and marketed to more than 20 million users in the United States. Smaller quantities of marijuana are also produced in Colombia, Jamaica, Paraguay and other countries." [7]

The 2003 INCSR, issued on March 1, 2004, repeated this estimate:

"Cannabis (marijuana) production and consumption is a serious problem in many countries—including in the United States. More than 10,000 metric tons of domestic marijuana and more than 5,000 metric tons of marijuana is cultivated and harvested in Mexico and Canada and marketed to more than 20 million users in the United States. Colombia, Jamaica, and Paraguay also export marijuana to the U.S." [8]

The 2005 report also included the identical claim:

"Cannabis (marijuana) production and consumption is a serious problem in many countries—including the United States, where it is by far the most widely used illicit drug. More than 10,000 metric tons of domestic marijuana and more than 5,000 metric tons of marijuana cultivated and harvested in Mexico and Canada is marketed to more than 20 million users in the United States. Colombia, Jamaica, and Paraguay also export marijuana to the U.S." [9]

This estimate was also reported to the United Nations and circulated to the international community as this country's official estimate in both the UN's 2003 report on "Global Illicit Drug Trends" and their 2004 "World Drug Report."

"Annual production of marijuana in the USA was estimated by the US authorities to amount to more than 10,000 [metric] tons in 2001/2002." [10] [11]

The source of this estimate of domestic marijuana production was the Marijuana Availability Working Group assembled by the Office of National Drug Control Policy (ONDCP); their 10,000 mt estimate of domestic marijuana production is explained in a

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December, 2002 report on “Drug Availability Estimates in the United States”[12] The same estimation method has been previously used by this analyst in prior reports on domestic marijuana production over the last twenty years. [13] [14] The MAWF estimates are also reported in a report on “Marijuana Availability in The United States and Its Associated Territories” by the Federal Research Service of the Library of Congress [15]. The following excerpts from the Federal Research Service report provide an overview of domestic marijuana production in the United States:

“The MAWG calculated a speculative estimate of domestic marijuana production by applying three hypothetical seizure rates to domestic cannabis eradication figures. Based on the federal seizure of 1,215 metric tons of marijuana in 2001, the MAWG estimated the street availability of marijuana in 2001 to be between 10,000 and 24,000 pure metric tons.”

“The data reviewed for this survey suggest that the street availability of marijuana is more likely closer to the figure of 24,000 metric tons than it is to 10,000 metric tons”. Pg 1-2

“At most, U.S. authorities are able to seize only about 10 percent of marijuana, and most of this amount is from foreign sources of supply.” pg 3

“Whether cultivated indoors or outdoors, most domestically produced marijuana is intended for sale and use in the local area. Some of the marijuana produced in the high-production states (Alabama, Alaska, California, Florida, Hawaii, Kentucky, Oregon, and Tennessee) undoubtedly is transported to other areas for sale.”

“Indoor growing operations are becoming a large-scale problem. According to 2000 DCE/SP statistics of the DEA, the five leading states for indoor growing activity were California, Florida, Oregon, Washington, and Wisconsin. This listing differs slightly from the Bureau of Justice statistics, which lists the five leading states for indoor growing activity as California, Washington, Florida, Texas, and Alaska. These states do not necessarily have the most cannabis, but they may have the most, or the most effective, eradication programs.” Pg 11-12

The ONDCP (Office of National Drug Control Policy) tasked the Marijuana Availability Working Group (MAWG) with developing a methodology for making a reliable estimate of the amount of marijuana available in the United States annually. The MAWG, made up of members of various federal agencies, labeled its two-part methodology the Marijuana Availability Model (MAM). Using its MAM, the MAWG calculated a speculative estimate of domestic marijuana production by applying three hypothetical seizure rates to domestic cannabis eradication figures. In calculating the availability of domestically produced marijuana, the MAWG relied on cannabis eradication statistics along with plant yield estimates. Pg 22

Although the quantity of domestically produced marijuana available in the United States in 2001 was unknown, the MAWG calculated—on the basis of cannabis eradication figures and potential yield per cannabis plant—that the estimated figure was between 5,577 and 16,731 metric tons. Pg 22-23

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Estimation Procedures

This report utilizes standard modeling practices to produce state-level estimates of marijuana production and value, utilizing known data and conservative parameters.

State-Level Allocation

The overall production estimate of the federal government of 10,000 metric tons is allocated to all 50 states on a proportional basis derived from the average seizures of cultivated plants by DEA's DCESP from the three previous years, 2003 through 2005. This allocation is based on a standard statistical assumption often referred to as "the law of large numbers"; given a sizable sample of data, unknown variables are assumed to balance out. Specifically, this report is based on the assumption that states with larger and more intensive eradication programs have correspondingly larger and more intensive marijuana cultivation activity.

Plant Yield

Plant yield has been estimated on a conservative basis of 200 grams (approximately 7 ounces) per outdoor plant and 100 grams (approximately 3.5 ounces) per indoor plant. These yields are considered conservative compared to frequent reports by police stating the potential yield of seized marijuana plants to be 1 pound per plant.

Plant Sex

Production estimates are based on the assumption that all seized plants are females. Male marijuana plants have little if any market value and are usually discarded by growers in mid-summer when plants reveal their sexual characteristics. The presence of any male plants included in the DCESP eradication figures is offset by the exclusion of additional seizure data from the Bureau of Land Management and the National Park Service.

Crop Value

This report also places a value of domestically grown marijuana at \$1,606 per pound. This price level is conservative compared to frequent reports from police that value seized marijuana between \$2000 and \$4000 per pound. Explanation of the source of this crop value follows below.

Seizure Estimates

Finally, this report estimates that regardless of the size and intensity of state-level eradication programs the seizure of outdoor cultivated marijuana plants represents only 8% of all outdoor cultivated plants and that seizures of indoor marijuana plants represent only 2% of all indoor plants.

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Discussion of Key Parameters

Higher seizure rates would reduce the overall production estimate. However the seizure rates used in this report produce a combined production estimate that is consistent with the federal government's widely reported estimate of 10,000 metric tons. Law enforcement in Kentucky suggest that they have eradicated up to half of that state's marijuana crop, however in light of conclusion in the Federal Research Service Report that authorities seize less than 10% of available marijuana and the context of their remarks (see below) this may merely be wishful thinking.

The Kentucky eradication program's results were reported in an Associated Press wire report on November 25, 2006 by the Lexington Herald-Leader:

"Police cut and burned 557,276 plants this year, up nearly 50,000 from the 2005 total and the most since 1995. Arrests also were up: 475 in 2006 compared with 452 in 2005. And if each plant they destroyed would have produced one pound of pot with an estimated worth of \$2,000, that would mean \$1 billion was prevented from entering the illegal drug market. . . .

"If police are finding that much marijuana, [Lt. Ed] Shemelya, [head of the marijuana-eradication program for the Kentucky State Police] said, it means there is a lot more they aren't finding. Even with additional flight time, he said, police can't cover all the primary pot-growing area of southern and eastern Kentucky and probably don't find more than half the crop." [16]

While higher yields have been documented they represent optimal production likely offset by less accomplished producers, in any event the use of a higher yield would increase the total production estimate beyond the government estimate of 10,000 metric tons.

Higher prices have also been reported, but they also represent optimal rather than average market prices more appropriate for this estimation procedure. For example, on October 31, 2006 the Los Angeles Times published an Associated Press story of a report by the California Department of Justice that:

"Authorities seized a record number of marijuana plants this harvest season, uprooting nearly 1.7 million plants valued at more than \$6.7 billion" [17]

indicating a value of \$4,000 per plant.

A seizure in Epsom New Hampshire was reported in the Boston Globe on November 3, 2006:

"Police said they shut down what might have been the largest indoor marijuana operation in state history, seizing nearly 1,400 plants potentially worth over \$4 million from a house." [18]

The same seizure was reported in the Manchester Union-Leader:

"A massive marijuana-growing operation discovered in the basement of an Epsom home had the potential of yielding \$4.2 million to \$7 million on the streets, making it the single largest marijuana seizure in state history, police said yesterday. State police narcotics investigators found nearly 1,400 infant plants. . ." [19]

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This latter report indicates a value of \$3,000 to \$5,000 per plant.

Furthermore the market prices frequently quoted by law enforcement in news accounts often represent retail or end-user prices whereas the price level used in this report is meant to provide an estimated value at the producer level. The price and yield indices used in this report represent a value of \$702 per outdoor plant and \$351 per indoor plant. These are conservative estimates that take into account less than optimal yield and production by many producers due to inexperience, lack of access to high-yield genetic stock, lack of sophisticated technology, cultivation for non-market personal use, and cultivation in marginal locations lacking sufficient space, sunlight, water, or fertilizer for optimal production.

Derivation of Price Index

The price of marijuana used in this report is based on data derived from the National Survey on Drug Use and Health (NSDUH) over a 5 year period, 2001-2005. [20] The farm price of marijuana was derived using a two stage process. The first stage involved producing an average retail price over this five year period. Survey respondents were asked what they paid for marijuana and what quantities they purchased. Midpoint prices per gram were derived for each category of purchases of less than one ounce, and a weighted price per gram was calculated with data from each of the last five years of survey data. For example, in 2005 the per gram price index was calculated at \$6.14 per gram, which is a price of \$173.93 per ounce or \$2782.92 per pound. The same model produced the following retail estimates:

Table 1. Retail Price Indices Derived from the National Survey on Drug Use and Health

Year	Gram	Ounce	Pound
2001	\$6.14	\$168	\$2,680
2002	\$6.79	\$155	\$2,483
2003	\$5.83	\$165	\$2,644
2004	\$5.47	\$192	\$3,078
2005	\$5.91	\$174	\$2,783

Stage Two involved reducing the Pound price index from a retail index to a producer level index. The producer index was calculated at 58.75% of retail value.

The framework producing this figure was based on assumptions that a wholesale price would be 83.5% of retail, a distributor price would be 67.5% of retail, a farm price would be at 50% of retail, and that the producer price index would be set at halfway between the farm and distributor prices to reflect differences in supply networks in terms of the number of intermediaries between end-use customers and producers. These are simplifying assumptions that are generally consistent with market conditions as reported in the press and government reports.

This model produced the following price indices for a pound of domestically produced marijuana:

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Table 2. Additional Price Indices Derived from the National Survey on Drug Use and Health

Year	Retail	Wholesale	Distributor	Farm		Producer Index
2001	\$2,680	\$2,238	\$1,809	\$1,340		\$1,575
2002	\$2,483	\$2,073	\$1,676	\$1,241		\$1,459
2003	\$2,644	\$2,208	\$1,785	\$1,322		\$1,554
2004	\$3,078	\$2,570	\$2,078	\$1,539		\$1,808
2005	\$2,783	\$2,324	\$1,878	\$1,391		\$1,635
					Average	\$1,606

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Domestic Marijuana Production

American marijuana farmers grew 22.3 million pounds of marijuana in 2006 with a value of \$35.8 billion. These figures, which include marijuana seized by law enforcement, include 56.4 million marijuana plants cultivated outdoors worth \$31.7 billion and 11.7 million plants cultivated indoors worth \$4.1 billion. Five states (California, Tennessee, Kentucky, Hawaii and Washington) had marijuana crops worth over \$1 billion. The top ten outdoor producers are listed in Table 3, the top ten indoor producers are listed in Table 4, and the top ten overall producers are listed in Table 5.

Table 3. The Top Ten Outdoor Marijuana Producing States

	Plants	Production (lbs)	Value (\$1000s)
California	17,445,553	7,692,043	\$12,353,421
Tennessee	6,742,057	2,972,688	\$4,774,137
Kentucky	6,171,906	2,721,299	\$4,370,406
Hawaii	5,340,368	2,354,660	\$3,781,583
North Carolina	900,204	396,915	\$637,446
Washington	834,835	368,093	\$591,157
Alabama	797,955	351,832	\$565,042
West Virginia	672,200	296,385	\$475,994
Georgia	603,671	266,169	\$427,467
Arkansas	599,632	264,388	\$424,607

Table 4. The Top Ten Indoor Marijuana Producing States

	Plants	Production (lbs)	Value (\$1000s)
California	4,222,055	930,788	\$1,494,846
Washington	1,239,514	273,262	\$438,858
Florida	1,192,349	262,864	\$422,159
Oregon	595,925	131,377	\$210,991
Texas	524,729	115,681	\$185,784
Alaska	359,417	79,237	\$127,254
Indiana	301,991	66,577	\$106,922
Michigan	300,502	66,248	\$106,395
Kentucky	295,280	65,097	\$104,546
Ohio	248,962	54,886	\$88,146

Table 5. The Top Ten Marijuana Producing States

	Plants	Production (lbs)	Value (\$1000s)
California	21,667,609	8,622,831	\$13,848,267
Tennessee	6,779,093	2,980,853	\$4,787,250
Kentucky	6,467,186	2,786,396	\$4,474,952
Hawaii	5,447,131	2,378,196	\$3,819,383
Washington	2,074,349	641,354	\$1,030,015
North Carolina	998,512	418,588	\$672,253
Florida	1,434,745	369,740	\$593,802
Alabama	810,287	354,551	\$569,409
West Virginia	723,986	307,801	\$494,328
Oregon	967,307	295,126	\$473,972

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Most marijuana is produced for local, in-state use. In nine states, though, the percentage of all marijuana production is greater than the state's percentage share of annual marijuana users [21]. (See Table 6.) For example, California contains 13.25% of annual marijuana users in the United States according to the National Survey on Drug Use and Health but also accounts for 38.68% of the marijuana produced in the United States, a ratio of production to use of 2.92. On this basis California is considered an export state in which marijuana is produced both for in-state use and export to other states. The nine states that fit this criteria as exporting marijuana producers are Hawaii, Tennessee, Kentucky, California, West Virginia, Arkansas, Alabama, Washington, and, though just barely, Alaska.

Table 6. Marijuana Exporting States, Where Market Share is Greater than Share of Annual Use

	Annual Users (1000s)	% of all Annual Users	Production (lbs)	% of all Production	Ratio of Production % to Use %
Hawaii	124	0.49%	2,378,196	10.67%	21.92
Tennessee	380	1.49%	2,980,853	13.37%	8.97
Kentucky	367	1.44%	2,786,396	12.50%	8.68
California	3,375	13.25%	8,622,831	38.68%	2.92
West Virginia	144	0.57%	307,801	1.38%	2.44
Arkansas	221	0.87%	271,211	1.22%	1.40
Alabama	323	1.27%	354,551	1.59%	1.25
Washington	637	2.50%	641,354	2.88%	1.15
Alaska	84	0.33%	80,463	0.36%	1.09

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Comparison with Other Cash Crops

At an estimated \$35.8 billion marijuana is by far the largest cash crop in the United States when compared to the average production values of other crops from 2003 to 2005. (Production values for other crops were obtained from the Department of Agriculture. [22])

Table 7. Top Cash Crops in the United States (Average Value 2003 – 2005)

Rank	Crop	Average Production Value (\$1000s)
1	Marijuana	\$35,803,591
2	Corn	\$23,299,601
3	Soybeans	\$17,612,200
4	Hay	\$12,236,638
5	Vegetables	\$11,080,733
6	Wheat	\$7,450,907
7	Cotton-All	\$5,314,870
8	Grapes	\$2,876,547
9	Apples	\$1,787,532
10	Rice	\$1,706,665
11	Oranges	\$1,583,009
12	Tobacco	\$1,466,633
13	Sugarbeets	\$1,158,078
14	Sugarcane	\$942,176
15	Sorghum	\$840,923
16	Cottonseed	\$821,655
17	Peanuts	\$819,617
18	Barley	\$653,095
19	Peaches	\$474,745
20	Beans	\$467,236

Based on a comparison with average production values of other crops from 2003 to 2005 marijuana is the top cash crop in 12 states, one of the top 3 cash crops in 30 states, and one of the top 5 cash crops in 39 states. [23] Marijuana is the largest cash crop in Alaska, Alabama, California, Connecticut, Hawaii, Kentucky, Maine, North Carolina, Oregon, South Carolina, Tennessee, and West Virginia. (See Table 8 below.)

Domestic marijuana production often takes place in marginal areas not usually associated with agricultural production. In addition to indoor cultivation in trailers, closets, basements, and attics marijuana is grown outdoors along fence lines, in forests, on other public lands, in undeveloped rural countryside areas, and on other parts of private land generally inaccessible and unseen by the public.

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**Table 8. Thirty States Where Marijuana is One of the Top Three Cash Crops
Average Values 2003 – 2005; Production Values (\$1000s)**

Alaska			Kentucky			Oklahoma		
Marijuana	\$129,223		Marijuana	\$4,474,952		Wheat	\$522,918	
Hay	\$6,820		Hay	\$421,036		Hay	\$334,511	
			Tobacco All	\$410,551		Marijuana	\$73,021	
Alabama			Massachusetts			Oregon		
Marijuana	\$569,409		Cranberries	\$51,016		Marijuana	\$473,972	
Cotton-Up	\$198,393		Hay	\$26,470		Hay	\$346,751	
Hay	\$120,262		Marijuana	\$20,396		Wheat	\$195,018	
Arizona			Maine			Rhode Island		
Vegetables	\$778,779		Marijuana	\$122,824		Hay	\$3,101	
Marijuana	\$274,590		Hay	\$32,726		Vegetables	\$2,902	
Hay	\$229,245		Apples	\$12,285		Marijuana	\$2,481	
California			Michigan			South Carolina		
Marijuana	\$13,848,267		Corn	\$537,908		Marijuana	\$142,434	
Vegetables	\$5,668,637		Soybeans	\$420,201		Tobacco All	\$97,136	
Grapes	\$2,607,181		Marijuana	\$324,830		Cotton-Up	\$92,256	
Connecticut			North Carolina			Tennessee		
Marijuana	\$32,179		Marijuana	\$672,253		Marijuana	\$4,787,250	
Hay	\$20,517		Tobacco All	\$539,872		Soybeans	\$277,861	
Tobacco All	\$11,270		Cotton-Up	\$306,317		Hay	\$252,365	
Florida			New Hampshire			Utah		
Vegetables	\$1,289,360		Hay	\$16,163		Hay	\$220,251	
All Oranges	\$1,046,646		Marijuana	\$10,349		Marijuana	\$29,020	
Marijuana	\$593,802		Apples	\$6,637		Wheat	\$23,630	
Georgia			New Mexico			Virginia		
Cotton-Up	\$498,574		Hay	\$173,963		Hay	\$304,825	
Marijuana	\$438,858		Vegetables	\$98,525		Marijuana	\$191,822	
Vegetables	\$421,748		Marijuana	\$41,226		Soybeans	\$106,684	
Hawaii			Nevada			Vermont		
Marijuana	\$3,819,383		Hay	\$161,868		Hay	\$49,294	
Sugarcane	\$64,953		Marijuana	\$49,172		Marijuana	\$29,009	
Macadamia Nuts	\$40,125		Vegetables	\$34,817		Apples	\$9,832	
Illinois			New York			Washington		
Corn	\$4,062,034		Hay	\$341,845		Apples	\$1,145,133	
Soybeans	\$2,728,190		Marijuana	\$329,565		Marijuana	\$1,030,015	
Marijuana	\$272,586		Vegetables	\$311,832		Wheat	\$507,220	
Indiana			Ohio			West Virginia		
Corn	\$1,813,064		Soybeans	\$1,165,908		Marijuana	\$494,328	
Soybeans	\$1,541,358		Corn	\$1,004,106		Hay	\$63,905	
Marijuana	\$312,058		Marijuana	\$457,316		Corn	\$7,636	

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Policy Analysis and Recommendations

The DEA's Domestic Cannabis Eradication/Suppression Program (DCESP) is a well-run and well-funded program. [24] The DCESP is staffed with dedicated and well-trained professionals, and it benefits from the best equipment, state-of-the-art technology, and the cooperation of local law enforcement and National Guard personnel throughout the country. From 2001 to 2005 the program eradicated an average of 33,033 outdoor cultivation sites per year and an average of 2,701 indoor marijuana grow-rooms per year. From 1982 to 2005 DCESP eradicated over 103 million cultivated marijuana plants, an average of 4.3 million cultivated plants a year over this 24 year period. (See Table 9.)

Table 9. Cultivated Marijuana Plants Eradicated (1982 – 2005)

Year	Total Cultivated Plants
1982	2,590,388
1983	3,793,943
1984	3,802,627
1985	3,961,879
1986	4,673,153
1987	7,432,834
1988	5,343,980
1989	5,635,696
1990	7,328,769
1991	5,540,367
1992	7,829,650
1993	4,339,515
1994	4,250,395
1995	3,270,253
1996	3,060,155
1997	4,052,365
1998	2,515,976
1999	3,413,083
2000	2,814,903
2001	3,304,760
2002	3,341,840
2003	3,651,106
2004	3,200,121
2005	4,209,086
Total	103,356,844

Despite their best efforts the DCESP has been unable to curtail the growth of domestic marijuana cultivation in the United States, let alone make any progress toward suppressing, abolishing, or eliminating this market phenomenon. For example, consider these comments from this 1982 report by the DEA on eradication efforts:

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“Quantitative analysis of data derived from the 1982 program reveals that domestic marihuana (sic) reduction for 1982 was significantly greater than that estimated for previous years. Using a relatively accurate plant count and conservative weight per plant factors, it is estimated that 1,643 metric tons of marketable marihuana were eradicated. The strategic intelligence estimate for 1981 domestic marihuana production was 1,200 metric tons. Therefore, the program shows that in 1982, 38% ore marihuana was eradicated than was previously believed to exist.

“Although a total U.S. marihuana production figure is not easily determined, the statistics obtained from this program reveal, without doubt, that the United States is becoming a major source for the drug.

“By all measures, the 1982 DEA Domestic Marijuana Eradication/Suppression Program was extremely successful.” Pages iii-iv [25]

The program has been successful in achieving its annual short-term goals of (a) establishing a credible deterrent to discourage market participation through eradicating large quantities of marijuana, making arrests, and (b) seizing property and assets from defendants. Nonetheless the program has been unsuccessful in curtailing the growth and expansion of marijuana cultivation in the United States. Indeed an unintended effect of publicity about program successes such as arrests and seizures has been to promote market participation. News about seizures of marijuana plots and grow rooms widely advertises the high prices and profit potential associated with the cultivation of high quality marijuana.

The 1982 DCESP report also notes that “the latest published estimate for domestic marihuana (sic) production in 1980 is 700 – 1000 metric tons. Not yet published estimates for 1981 indicate an increase to 900 – 1,200 metric tons.” [26] Contemporary Federal Government estimates of marijuana production in the United States have now reached 10,000 metric tons, a ten-fold increase over this 25 year period.

The public policy of discouraging marijuana use through prohibitive law enforcement activities depends on establishing and exercising control over production. The purpose of the federal Controlled Substances Act (CSA) is to establish a closed system of production and distribution in which both illicit production and diversion from licit manufacture is both minimal and subject to control through law enforcement activity. Illegal drugs such as heroin and cocaine, at least in theory, are subject to control by way of eradication, interdiction, and disruption of long international supply lines. Marijuana, on the other hand, is produced through increasingly decentralized and diffuse domestic and international cultivation, frequently in places virtually imperceptible to law enforcement efforts.

DEA’s eradication efforts began in 1979 in California and Hawaii. In 1981 the program added five additional states, and in 1982 the program was expanded to 25 states. The program now operates in every state in the country. Extensive eradication efforts produced unintended effects, such as driving cultivation onto federal lands and into indoor cultivation. Over time the DCESP required the assistance of the US Forest Service, the Bureau of Land Management, and the National Guard. Growers began to cultivate smaller plots to avoid aerial detection and also to develop techniques and genetic strains to produce marijuana with increased potency. Even as DCESP expanded its efforts to all fifty states, developed new technologies, and adapted its enforcement tactics to respond to trends and changes in grower strategies marijuana production in the United States steadily increased in scope, size, price, and profitability.

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While the DEA's DCESP often provides hope of short-term gains against the proliferation of marijuana cultivation in the United States a long-term perspective demonstrates that it has only produced a facade of control. Despite the best efforts of dedicated law enforcement officers, public administration professionals, and political appointees DCESP, based on past performance over the last 25 years, appears incapable of exercising control over or providing a credible deterrent against the cultivation of marijuana in the United States.

Advocates for and supporters of the current prohibitive marijuana policies often argue against alternatives to law enforcement suppression policies by claiming that legalization, the only reasonable alternative, would lead to greater use of marijuana. However without effective and credible control over production it is impossible to limit access to marijuana by teens and children, and limiting such access is not only the paramount objective of anti-drug policies but also the only certain way to reduce marijuana use in the long term. Arguments based on the premise that marijuana use is dangerous or otherwise detrimental to minors and adolescents in fact make the strongest case in support of changing public policies. Adopting more realistic and more effective methods of controlling the market will not only reduce access to teenagers and children but also provide sufficient revenue to fund sufficient law enforcement, education, and treatment approaches to all drug abuse issues.

The ten-fold growth of production over the last 25 years and its proliferation to every part of the country demonstrate the irrefutable reality that marijuana has become a pervasive and ineradicable part of the economy of the United States. The contribution of this market to the nation's gross domestic product is overlooked in the debate over effective control and discouragement of use by teenagers and children. Like all profitable agricultural crops marijuana adds resources and value to the economy. The focus for public policy should be how to effectively control this market through regulation and taxation in order to achieve immediate and realistic goals, such as reducing teenage access, rather than to continue to sacrifice achievable goals in exchange for unachievable long-term goals that have failed to materialize over the last 25 years.

The remedy to this failure to exercise control will not be found in better administration. The current policy approach will not succeed through increased funding, refinements in management, more sophisticated technology or marginal adjustments such as changes in legal penalties or greater efforts to build public support. These adjustments have been tried and have failed. New regulatory approaches need to be explored, discussed and enacted.

It's time to debate the legalization of marijuana in the United States. Skeptics argue against legalization as a way of reducing teenage access, for example, by citing teenage access to alcohol and tobacco in a legal market despite age restrictions and related penalties. However unlike marijuana teens do not have a profit motive to sell tobacco and alcohol to one another. Effective control over production of tobacco and alcohol are prerequisites to both controlling access to those drugs by teenagers and the implementation of successful educational and discouragement campaigns. Replacing the façade of control provided by current policies with effective regulatory policies is also the first step in enacting effective policies to reduce teenage

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marijuana use.

Key elements of marijuana legalization policies should include federal and state excise taxes on production, distribution, and sales along with licensed market participation, age restrictions, and prohibitions on advertising and marketing to minors. Current regulatory models for tobacco and alcohol provide suitable examples upon which to base legislation to enact effective marijuana controls under federal and state laws.

Under the policies of the last 25 years marijuana has become the most widely produced illegal drug in the United States and the nation's largest cash crop. The ten-fold increase in marijuana production from 1,000 metric tons in 1981 to the contemporary estimate of 10,000 metric tons undermines all drug control programs; with results like these it is difficult to take assurances of long-term effectiveness in any federal anti-drug program seriously. Taxation and regulation of marijuana is in the public interest. The refusal to implement a regulatory program for marijuana in the United States is irresponsible and a violation of the public trust.

The ten-fold growth of production over the last 25 years and its proliferation to every part of the country demonstrate that marijuana has become a pervasive and ineradicable part of our national economy. The failure of intensive eradication programs suggests that it is finally time to give serious consideration to marijuana's legalization in the United States.

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Appendix 1a. Outdoor Marijuana Cultivation, by State

<u>State</u>	<u>Rank</u>	<u>Total Plants</u>	<u>Total Production (lbs)</u>	<u>Total Value (\$1000s)</u>
Alabama	7	797,955	351,832	\$565,042
Alaska	48	2,781	1,226	\$1,969
Arizona	13	378,602	166,932	\$268,093
Arkansas	10	599,632	264,388	\$424,607
California	1	17,445,553	7,692,043	\$12,353,421
Colorado	27	67,514	29,768	\$47,807
Connecticut	38	21,892	9,652	\$15,502
Delaware	46	4,863	2,144	\$3,443
Florida	19	242,395	106,876	\$171,643
Georgia	9	603,671	266,169	\$427,467
Hawaii	4	5,340,368	2,354,660	\$3,781,583
Idaho	25	90,210	39,775	\$63,879
Illinois	15	329,862	145,442	\$233,579
Indiana	17	289,694	127,731	\$205,136
Iowa	41	17,153	7,563	\$12,146
Kansas	28	67,279	29,664	\$47,641
Kentucky	3	6,171,906	2,721,299	\$4,370,406
Louisiana	30	53,236	23,473	\$37,697
Maine	23	122,218	53,888	\$86,544
Maryland	33	29,360	12,945	\$20,790
Massachusetts	36	22,796	10,051	\$16,142
Michigan	16	308,475	136,012	\$218,435
Minnesota	40	17,191	7,580	\$12,173
Mississippi	31	50,728	22,367	\$35,921
Missouri	22	139,820	61,649	\$99,008

Marijuana Production in the United States (2006)

Appendix 1b. Outdoor Marijuana Cultivation, by State

<u>State</u>	<u>Rank</u>	<u>Total Plants</u>	<u>Total Production (lbs)</u>	<u>Total Value (\$1000s)</u>
Montana	47	3,540	1,561	\$2,507
Nebraska	39	18,006	7,939	\$12,750
Nevada	43	11,642	5,133	\$8,244
New Hampshire	45	8,035	3,543	\$5,690
New Jersey	42	12,355	5,448	\$8,749
New Mexico	32	38,186	16,837	\$27,040
New York	12	385,868	170,136	\$273,238
North Carolina	5	900,204	396,915	\$637,446
North Dakota	35	26,665	11,757	\$18,882
Ohio	11	521,343	229,869	\$369,170
Oklahoma	24	93,093	41,046	\$65,921
Oregon	14	371,382	163,749	\$262,981
Pennsylvania	26	68,831	30,349	\$48,740
Rhode Island	49	2,076	915	\$1,470
South Carolina	21	181,464	80,011	\$128,497
South Dakota	44	10,689	4,713	\$7,569
Tennessee	2	6,742,057	2,972,688	\$4,774,137
Texas	18	284,186	125,302	\$201,236
Utah	37	22,097	9,743	\$15,647
Vermont	34	27,324	12,048	\$19,348
Virginia	20	205,459	90,590	\$145,488
Washington	6	834,835	368,093	\$591,157
West Virginia	8	672,200	296,385	\$475,994
Wisconsin	29	54,491	24,026	\$38,586
Wyoming	50	173	76	\$122
United States		44,711,355	19,714,001	\$31,660,686

Marijuana Production in the United States (2006)

Appendix 2a. Indoor Marijuana Cultivation, by State

<u>State</u>	<u>Rank</u>	<u>Total Plants</u>	<u>Total Production (lbs)</u>	<u>Total Value (\$1000s)</u>
Alabama	45	12,332	2,719	\$4,366
Alaska	6	359,417	79,237	\$127,254
Arizona	42	18,350	4,045	\$6,497
Arkansas	37	30,947	6,822	\$10,957
California	1	4,222,055	930,788	\$1,494,846
Colorado	11	222,503	49,053	\$78,779
Connecticut	26	47,104	10,384	\$16,677
Delaware	48	3,815	841	\$1,351
Florida	3	1,192,349	262,864	\$422,159
Georgia	36	32,171	7,092	\$11,390
Hawaii	18	106,763	23,537	\$37,800
Idaho	20	102,112	22,512	\$36,153
Illinois	17	110,170	24,288	\$39,006
Indiana	7	301,991	66,577	\$106,922
Iowa	38	30,355	6,692	\$10,747
Kansas	27	46,624	10,279	\$16,508
Kentucky	9	295,280	65,097	\$104,546
Louisiana	25	51,112	11,268	\$18,097
Maine	19	102,469	22,590	\$36,280
Maryland	32	38,362	8,457	\$13,582
Massachusetts	46	12,016	2,649	\$4,254
Michigan	8	300,502	66,248	\$106,395
Minnesota	12	184,457	40,665	\$65,308
Mississippi	30	39,474	8,702	\$13,976
Missouri	23	81,651	18,001	\$28,909

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Appendix 2b. Indoor Marijuana Cultivation, by State

<u>State</u>	<u>Rank</u>	<u>Total Plants</u>	<u>Total Production (lbs)</u>	<u>Total Value (\$1000s)</u>
Montana	39	29,396	6,481	\$10,408
Nebraska	35	36,536	8,055	\$12,936
Nevada	16	115,597	25,484	\$40,928
New Hampshire	44	13,158	2,901	\$4,659
New Jersey	28	41,075	9,055	\$14,543
New Mexico	29	40,066	8,833	\$14,185
New York	14	159,089	35,073	\$56,327
North Carolina	21	98,308	21,673	\$34,806
North Dakota	43	15,076	3,324	\$5,338
Ohio	10	248,962	54,886	\$88,146
Oklahoma	41	20,053	4,421	\$7,100
Oregon	4	595,925	131,377	\$210,991
Pennsylvania	22	82,763	18,246	\$29,303
Rhode Island	49	2,856	630	\$1,011
South Carolina	31	39,362	8,678	\$13,936
South Dakota	50	347	76	\$123
Tennessee	34	37,036	8,165	\$13,113
Texas	5	524,729	115,681	\$185,784
Utah	33	37,771	8,327	\$13,373
Vermont	40	27,285	6,015	\$9,660
Virginia	15	130,866	28,851	\$46,334
Washington	2	1,239,514	273,262	\$438,858
West Virginia	24	51,785	11,417	\$18,335
Wisconsin	13	163,771	36,105	\$57,984
Wyoming	47	5,549	1,223	\$1,965
United States		11,701,256	2,579,642	\$4,142,905

Marijuana Production in the United States (2006)

Appendix 3a. Total Marijuana Cultivation, by State

<u>State</u>	<u>Rank</u>	<u>Total Plants</u>	<u>Total Production (lbs)</u>	<u>Total Value (\$1000s)</u>
Alabama	8	810,287	354,551	\$569,409
Alaska	22	362,198	80,463	\$129,223
Arizona	18	396,952	170,978	\$274,590
Arkansas	13	630,579	271,211	\$435,564
California	1	21,667,609	8,622,831	\$13,848,267
Colorado	24	290,016	78,821	\$126,586
Connecticut	37	68,995	20,037	\$32,179
Delaware	48	8,678	2,985	\$4,794
Florida	7	1,434,745	369,740	\$593,802
Georgia	12	635,842	273,261	\$438,858
Hawaii	4	5,447,131	2,378,196	\$3,819,383
Idaho	26	192,322	62,287	\$100,032
Illinois	19	440,032	169,730	\$272,586
Indiana	17	591,685	194,308	\$312,058
Iowa	43	47,508	14,255	\$22,894
Kansas	31	113,903	39,943	\$64,148
Kentucky	3	6,467,186	2,786,396	\$4,474,952
Louisiana	32	104,348	34,741	\$55,794
Maine	25	224,687	76,478	\$122,824
Maryland	36	67,722	21,403	\$34,372
Massachusetts	44	34,812	12,700	\$20,396
Michigan	16	608,977	202,260	\$324,830
Minnesota	29	201,648	48,245	\$77,481
Mississippi	33	90,202	31,069	\$49,897
Missouri	23	221,471	79,649	\$127,917

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Appendix 3b Total Marijuana Cultivation, by State

<u>State</u>	<u>Rank</u>	<u>Total Plants</u>	<u>Total Production (lbs)</u>	<u>Total Value (\$1000s)</u>
Montana	45	32,936	8,041	\$12,914
Nebraska	40	54,543	15,994	\$25,686
Nevada	34	127,239	30,618	\$49,172
New Hampshire	46	21,193	6,444	\$10,349
New Jersey	42	53,431	14,503	\$23,292
New Mexico	35	78,252	25,670	\$41,226
New York	15	544,957	205,208	\$329,565
North Carolina	6	998,512	418,588	\$672,253
North Dakota	41	41,741	15,081	\$24,220
Ohio	11	770,305	284,755	\$457,316
Oklahoma	30	113,147	45,467	\$73,021
Oregon	10	967,307	295,126	\$473,972
Pennsylvania	28	151,594	48,595	\$78,043
Rhode Island	49	4,932	1,545	\$2,481
South Carolina	21	220,826	88,688	\$142,434
South Dakota	47	11,036	4,790	\$7,692
Tennessee	2	6,779,093	2,980,853	\$4,787,250
Texas	14	808,915	240,983	\$387,019
Utah	38	59,867	18,070	\$29,020
Vermont	39	54,609	18,063	\$29,009
Virginia	20	336,325	119,441	\$191,822
Washington	5	2,074,349	641,354	\$1,030,015
West Virginia	9	723,986	307,801	\$494,328
Wisconsin	27	218,263	60,131	\$96,570
Wyoming	50	5,722	1,299	\$2,087
United States		56,412,611	22,293,643	\$35,803,591

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Notes

[1] The Drug Enforcement Administration's Domestic Cannabis Eradication/Suppression Program releases annual statistics on eradicated plants and arrests. From 1982 to 1993 these statistics were published in summary tables contained in the program's final report. In subsequent years the tables have been published in the Sourcebook of Criminal Justice Statistics. The eradication statistics for 1982 through 2005 are available in downloadable CSV and other formats at <http://www.drugscience.org/Archive/bcr2/DCESP.html> along with the program reports from 1982 through 1993.

[2] Webster's Encyclopedia Unabridged Dictionary of the English Language. New York: Gramercy Books. 1996.

[3] Cannabis Investigation Section, Drug Enforcement Administration, Department of Justice. "Domestic Marijuana Eradication/Suppression Program, 1982." Washington, DC: Drug Enforcement Administration. December, 1982. pg iii.
<http://www.drugscience.org/Archive/DCESP/dea1982.pdf>

[4] Substance Abuse and Mental Health Services Administration, Office of Applied Studies, Department of Health and Human Services.

2001 National Household Survey on Drug Abuse. See Table H1.
<http://www.drugabusestatistics.samhsa.gov/nhsda/2k1nhsda/vol1/toc.htm>

2002 National Survey on Drug Use and Health. See Table 1.31A
<http://www.drugabusestatistics.samhsa.gov/nhsda/2k2nsduh/Overview/2k2Overview.htm#chap1>

[5] Office of National Drug Control Programs, "National Drug Control Strategy – 2002", Washington, DC: Office of National Drug Control. February, 2002. Table 37.
<http://www.whitehousedrugpolicy.gov/publications/policy/03ndcs/table37.html>

[6] Office of National Drug Control Programs, "National Drug Control Strategy – 2003", Washington, DC: Office of National Drug Control. February, 2003. Pg. 30. Table w/introductory comment: "There are five principal illegal drug markets in the United States:"
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[7] Bureau of International Narcotics and Law Enforcement, Department of State. "2002 International Narcotic Control Strategy Report." Washington, DC: Department of State. March 1, 2003. Pg II-7.
<http://www.state.gov/p/inl/rls/nrcrpt/2002/>

[8] Bureau of International Narcotics and Law Enforcement, Department of State. "2003 International Narcotic Control Strategy Report." Washington, DC: Department of State. March 1, 2004. See "Policy and Program Developments."
<http://www.state.gov/p/inl/rls/nrcrpt/2003/>

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[9] Bureau of International Narcotics and Law Enforcement, Department of State. "2005 International Narcotic Control Strategy Report." Washington, DC: Department of State. See "Policy and Program Developments."

<http://www.state.gov/p/inl/rls/nrcrpt/2005/>

[10] United Nations Office on Drugs and Crime (UNODC), "Trafficking in Cannabis," Chapter 1.2.4, Global Illicit Drug Trends, 2003 (Vienna, Austria), pg 71.

http://www.unodc.org/pdf/report_2003-06-26_1.pdf

[11] United Nations Office on Drugs and Crime (UNODC), "Cannabis Market - Production" Chapter 2.3.1, 2004 World Drug Report 2004 (Vienna, Austria), pg 126.

http://www.unodc.org/unodc/en/world_drug_report_2004.html

[12] Office of National Drug Control Policy (ONDCP) "Drug Availability Estimates in the United States", NCJ 197107. ONDCP, December 2002. Chapter 4. Marijuana Availability in the United States.

http://www.whitehousedrugpolicy.gov/publications/drugfact/drug_avail/

[13] Gettman, Jon B. "Marijuana in America; NORML's 1986 Domestic Marijuana Crop Report." Common Sense for America, Volume 2, Number 1. Spring, 1987. Washington, DC: National Organization for the Reform of Marijuana Laws.

[14] Gettman, Jon B. and Paul Armentano. "1998 Marijuana Crop Report: An Evaluation of Marijuana Production, Value, and Eradication Efforts in the United States" October, 1998. Washington, DC: National Organization for the Reform of Marijuana Laws.

http://www.norml.org/index.cfm?Group_ID=4444

[15] Marijuana Availability In The United States And Its Associated Territories -- A Report Prepared By The Federal Research Division, Library Of Congress Under An Interagency Agreement With The National Guard Bureau Counterdrug Office (Ngb-Cd). December 2003 Federal Research Division, Library of Congress. Washington, D.C. 20540-4840

[16] Associated Press. Reported in the Lexington Herald-Leader. "Eyes in the sky help Kentucky authorities cut marijuana trade" November 25, 2006.

<http://www.kentucky.com/mld/kentucky/news/state/16094614.htm>

[17] Los Angeles Times. In Brief / The State / Sacramento. "Record number of marijuana plants seized." Pg B4. October 31, 2006

[18] Boston Globe "Police seize 1,400 marijuana plants worth millions." November 3, 2006

[19] Manchester Union-Leader. Marchocki, Kathryn "1,396 pot plants seized in Epsom."

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<http://www.unionleader.com/article.aspx?headline=1%2C396+pot+plants+seized&articleId=6189640c-1e94-484b-a0b1-b6d437b84aef>

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(<http://www.icpsr.umich.edu/>). The variables utilized in creation of the price estimates were “MMLSOZS” (Amount of Marijuana Bought Last Time, Ounces) and MMLSPCTB (Amount Paid For Marijuana Bought Last Time).

[21] Substance Abuse and Mental Health Services Administration, Office of Applied Studies, Department of Health and Human Services. National Survey on Drug Use and Health. 2002-2004 Sample Based Prevalence Estimates. “State estimates for use of types of illicit drug in lifetime, past year, & past month for population age 12 and older (annual estimates based on 2002-2004)”

<http://www.drugabusestatistics.samhsa.gov/2k5States/statePE.doc>

[22] National Agricultural Statistics Service (NASS), US Department of Agriculture. “Agricultural Statistics 2005”; “Agricultural Statistics 2006.” Washington, DC: Government Printing Office. 2005, 2006. See also NASS, Statistics by Subject – Crops and Plants.

http://www.nass.usda.gov/QuickStats/indexbysubject.jsp?Pass_group=Crops+%26+Plants

[23] Marijuana is one of the top five cash crops in: Alaska, Alabama, Arkansas, Arizona, California, Colorado, Connecticut, Florida, Georgia, Hawaii, Iowa, Idaho, Illinois, Indiana, Kentucky, Massachusetts, Maryland, Maine, Michigan, Montana, North Carolina, New Hampshire, New Jersey, New Mexico, Nevada, New York, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Utah, Virginia, Washington, & West Virginia. Additional listings of the production value of marijuana and other crops by state are available at <http://www.drugscience.org/Archive/bcr2/stcrops.html>

[24] The Drug Enforcement Administration’s Domestic Cannabis Eradication/Suppression Program published final reports from 1982 to 1993. These reports summarized program activity, cultivation trends, technology developed for the eradication program and other aspects of DCESP’s comprehensive effort to respond to domestic marijuana production in the United States. These reports are available at <http://www.drugscience.org/Archive/bcr2/DCESP.html> along with tables of program statistics in various formats.

[25] Cannabis Investigation Section, Drug Enforcement Administration, Department of Justice. “Domestic Marijuana Eradication/Suppression Program, 1982.” Washington, DC: Drug Enforcement Administration. December, 1982. Pages iii-iv.

<http://www.drugscience.org/Archive/DCESP/dea1982.pdf>

[26] Cannabis Investigation Section, Drug Enforcement Administration, Department of Justice. “Domestic Marijuana Eradication/Suppression Program, 1982.” Washington, DC: Drug Enforcement Administration. December, 1982. Page 5.

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About the Author

Jon B. Gettman holds a Ph.D. in public policy from George Mason University, where his doctoral studies concentrated on regional economic development. He also holds a MS in justice from American University and a BA in anthropology from Catholic University. Jon Gettman conducts research and does consulting work under the name of Gettman RDA Consulting in Lovettsville, Virginia and is currently an adjunct instructor in public administration at Shepherd University in Shepherdstown, WV.