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Comparative Cannabis: Approaches to Marijuana Agriculture Regulation in the United States and Canada

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ABSTRACT

The United States and Canada may be friends and allies, but the two countries' approaches to the regulation of marijuana agriculture have not evolved in tandem. On the contrary, their respective paths toward legalization and regulation of marijuana agriculture are remarkably divergent. In the United States, where marijuana remains a federally prohibited and tightly-controlled substance, legalization and regulation have remained the province of state legislatures and their administrative agencies for decades. In Canada, a succession of court cases paving the way toward medicinal marijuana use has prompted the federal government to develop a national framework committed to "legalize, regulate, and restrict access" to marijuana.

Many jurisdictions attempting to regulate (or exploring the possibility of regulating) the marijuana industry struggle to address the first step in the supply chain—agriculture. This essay will compare and contrast the experiences of the United States and Canada in the regulation of marijuana agriculture. It is evident that there is more than one regulatory approach that can provide a safe and sustainable product to consumers while promoting equity among farmers. Nonetheless, the trials and tribulations of pioneering governments can illuminate the pitfalls, consequences, and drawbacks policymakers are likely to encounter in the future.

I. INTRODUCTION

Federal marijuana policy in the United States and Canada has, in recent decades, been fixated on prohibition. That may be about to change. In 2017, Canada is expected to become the first 'Group of Seven' nation to propose legislation that would legalize and regulate marijuana for recreational use.[1] According to the Canadian government's party platform, "marijuana prohibition does not work."[2] In a change of direction from decades of prohibition, the government is now calling for Parliament to "legalize, regulate, and restrict access to marijuana."[3] Importantly, policymakers and regulators are in the process of developing a federal framework for marijuana regulation that would

1. AFP, *Canada to Legalize Recreational Marijuana by Mid-2018: Report*, YAHOO! (Mar. 26, 2017), https://www.yahoo.com/news/canada-legalize-recreational-marijuana-mid-2018-report-145852604.html (on file with *The University of the Pacific Law Review*).

2. *Marijuana*, LIBERAL PARTY OF CANADA, goo.gl/WK8im6 (last visited July 22, 2017) (on file with *The University of the Pacific Law Review*).

3. *Id.*

address agricultural considerations, including environmental impacts and protections for small-scale farmers.[4]

The mood of the United States federal government is a marked contrast. Marijuana has been a federally criminalized substance since passage of the Controlled Substances Act in 1970.[5] Following the 2016 presidential elections, there is uncertainty regarding President Donald Trump's stance toward marijuana legalization and regulation on the state level.[6] However, early indications suggest his administration is not interested in a federal regulatory framework.[7] Although the Republican Party in control of the federal government generally supports federalism principles and state autonomy, there is fear that the federal government will interfere with state marijuana legalization and regulation efforts.[8] Absent a regulatory framework that goes beyond prohibition, there is little hope for federal involvement in agricultural or environmental issues facing the marijuana industry.

In addition to this contrast on the federal level, the United States and Canada have divergent experiences when it comes to subnational marijuana legalization and regulation. In the United States, marijuana legalization has gained momentum and become commonplace on the state level. California became the first state to legalize medical marijuana use in 1996.[9] Colorado and Washington then became the first states to legalize recreational marijuana use in 2012.[10] At the time of writing, twenty-eight states had legalized medical marijuana, while eight states (plus the District of Columbia) had legalized recreational marijuana.[11]

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4. *See A Framework for the Legalization and Regulation of Cannabis in Canada*: *The Final Report of the Task Force on Cannabis Legalization and Regulation*, HEALTH CANADA (Dec. 2016), http://healthycanadians.gc.ca/task-force-marijuana-groupe-etude/framework-cadre/index-eng.php (on file with *The University of the Pacific Law Review*).

5. Collin B. Walsh & Daniel T. Nau, *The History, Law, and Psychology of Criminalizing Marijuana: A Comparative Analysis with Alcohol and Tobacco*, 274 INDIANA LEGAL STUD. RES. PAPER SERIES 23 (2013).

6. John Schroyer, Bart Schaneman & Omar Sacirbey, *Legal Uncertainty for Marijuana Industry after Trump Election, Conference Panelists Say*, MARIJUANA BUSINESS DAILY (Nov. 17, 2016), https://goo.gl/hz5GEs (on file with *The University of the Pacific Law Review*).

7. Current U.S. Attorney General, tasked with enforcing the nation's federal laws, stated as Senator of Alabama, "Good people don't smoke marijuana." Sean Cockerham, *Congress' Cannabis Caucus Ready to 'Bump Heads' with Anti-pot Trump Attorney General*, MCCLATCHY DC BUREAU (Feb. 16, 2017, 6:29 PM), https://goo.gl/oqrarB (on file with *The University of the Pacific Law Review*).

8. *Id.*

9. CAL. HEALTH & SAFETY CODE § 11362.5 (Westlaw 2017); Adam Cohen, *California's Prop 19: Leading the Way to Pot Legalization*, Time (Oct. 6, 2010), http://content.time.com/time/nation/article/0,8599,2023860,00.html (on file with *The University of the Pacific Law Review*).

10. Colo. CONST. art. XVIII, § 16 (2012) (Colorado constitutional amendment 64); Wash. Initiative Measure No. 502 (2012); Maia Szalavitz, *Two U.S. States Become First to Legalize Marijuana*, TIME (Nov. 7, 2012), http://healthland.time.com/2012/11/07/two-u-s-states-become-first-to-legalize-marijuana/ (on file with *The University of the Pacific Law Review*).

11. *29 Legal Medical Marijuana States and DC*, PROCON.ORG (last visited Apr. 2, 2017), https://goo.gl/7XV2kr (on file with *The University of the Pacific Law Review*); *Marijuana Overview*, NAT'L CONFERENCE OF STATE LEGISLATURES (April 3, 2017), http://www.ncsl.org/research/civil-and-criminal-justice/marijuana-overview.aspx (on file with *The University of the Pacific Law Review*).

Only four states have maintained a strict prohibition policy on marijuana cultivation, distribution, sale, or consumption.[12] These states represent less than five percent of the U.S. population.[13] Despite the federal prohibition, there are now a multitude of state regulatory frameworks in place, with a variety of statutory goals and approaches to compare.

Canada has not experienced the same subnationally-driven path toward legalization. Instead, the erosion of prohibition has been driven largely by the courts. *Regina v. Parker*, 49 O.R. (3rd) 481 [2000], set the stage for legalization by declaring the federal government's marijuana prohibition unconstitutional absent an exemption for medical necessity.[14] As the Court stated, "[t]he marijuana laws forced the accused to choose between commission of a crime to obtain effective medical treatment and inadequate treatment," a deprivation of liberty, security, and fundamental justice.[15] Invalidating the marijuana prohibition forced the Canadian Parliament to develop at least a basic framework for medical marijuana use.[16] Although the development of subsequent regulatory frameworks has been inconsistent, Canada's experience with marijuana regulation on the federal level can serve as a meaningful starting point with which to pursue recreational legalization and regulation.

A more developed exploration of U.S. and Canadian experiences with marijuana legalization and regulation is provided in the next section. However, this essay's primary focus is on the contrasting experiences of these two countries with respect to marijuana agriculture.[17] The agricultural component of the marijuana industry is, after all, where the chain of supply begins. And yet, the need for thoughtful and realistic agricultural regulations often takes a back seat to more visible concerns, such as distribution, marketing, sale, and consumption. The lack of attention paid to marijuana cultivation is a disservice to farmers, regulators, and consumers. Farmers often confront ambiguous or unresponsive legal requirements, and are forced to choose between staying in the shadows of

12. By "strict prohibition policy," I mean states that have passed neither decriminalization laws nor allow for non-psychoactive marijuana consumption for medical purposes. These states are Idaho, Indiana, Kansas, South Dakota, and West Virginia. *Marijuana Overview*, *supra* note 11; *State Medical Marijuana Laws*, NAT'L CONFERENCE OF STATE LEGISLATURES (July 7, 2017), http://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx (on file with *The University of the Pacific Law Review*).

13. According to the U.S. Census Bureau's July 2016 estimates, the combined population of Idaho, Indiana, Kansas, and South Dakota is 12,088,936. The estimated population of the United States is 323,127,513. *Population Estimates, July 1, 2016, (V2016)*, U.S. CENSUS BUREAU, https://goo.gl/zlyP5G (last visited July 20, 2017) (on file with *The University of the Pacific Law Review*).

14. Regina v. Parker (2000), 49 O.R. 3d 481 (Can. Ont. C.A.).

15. *Id*. at ¶ 7–9.

16. *See*, Marihuana for Medical Purposes Regulations, Repealed SOR/2013-230 (Can.).

17. This essay draws from, and builds on, the author's previous work on marijuana agriculture regulation. *See* Ryan B. Stoa, *Weed and Water Law: Regulating Legal Marijuana*, 67 HASTINGS L.J. 565 (2016); Ryan B. Stoa, *Marijuana Agriculture Law: Regulation at the Root of an Industry*, 69(2) FLORIDA L. REV. (forthcoming, 2017); Ryan B. Stoa, *Marijuana Appellations: The Case for Cannabicultural Designations of Origin*, 11(1) HARV. L. & POL'Y REV. (forthcoming 2017).

the illicit market or attempting to comply with a confusing web of unrealistic regulations. Policymakers and administrative agencies face their own challenge: tasked with creating an ambitious regulatory framework from scratch. These regulators often do not have a history with the marijuana industry, or analogous regulations to fall back on. Consumers and the public at large, finally, benefit from having a diversity of market options, as well as marijuana that is sustainably cultivated.

The early record of marijuana agriculture regulation in the U.S. and Canada is mixed. Some U.S. states, such as California, acknowledge the agricultural component of the marijuana industry and are taking steps to develop a regulatory framework that supports farming communities and the environment.[18] Other states, such as New York and Florida, aim to control cultivation by severely limiting the number of producers.[19] In any case, most states have not developed a robust regulatory scheme for marijuana that comprehensively addresses agricultural issues.

Canada's approach to marijuana agriculture regulation has been simultaneously restrictive and permissive under the current medically-focused framework. On the one hand, Health Canada (authorized to regulate cultivation) has only issued fifty cultivation licenses nation-wide,[20] despite receiving 1,665 applications.[21] Nine Canadian provinces have two cultivators or less.[22] In addition, marijuana can only be grown indoors,[23] an energy-intensive agricultural method that artificially reproduces the light, soil, and water conditions found on outdoor farms. On the other hand, licensed cultivators are allowed to develop, grow, and sell whatever strain(s) of marijuana they see fit, and are free to set their own prices.[24]

In anticipation of legislation that would legalize and regulate recreational marijuana in Canada, the federal government formed a task force to make recommendations on marijuana policy.[25] The task force report recommended

18. *Infra* Part III.

19. *Id.*

20. *Authorized Licensed Producers of Cannabis for Medical Purposes*, GOV'T OF CAN., https://www.canada.ca/en/health-canada/services/drugs-health-products/medical-use-marijuana/licensed-producers/authorized-licensed-producers-medical-purposes.html (last visited July 22, 2017) (on file with *The University of the Pacific Law Review*).

21. *Application Process: Becoming a Licensed Producer of Cannabis for Medical Purposes*, GOV'T OF CAN., https://www.canada.ca/en/health-canada/services/drugs-health-products/medical-use-marijuana/licensed-producers/application-process-becoming-licensed-producer.html (last visited July 22, 2017) (on file with *The University of the Pacific Law Review*).

22. *Authorized Licensed Producers of Cannabis for Medical Purposes*, *supra* note 20. Five provinces have no licensed cultivators.

23. *Frequently Asked Questions*, GOV'T OF CAN., https://www.canada.ca/en/health-canada/services/drugs-health-products/medical-use-marijuana/licensed-producers/frequently-asked-questions-medical-use-marihuana.html (last visited July 2, 2017) (on file with *The University of the Pacific Law Review*).

24. *Id.*

25. *A Framework for the Legalization and Regulation of Cannabis in Canada*, *supra* note 4, at 2.

significant changes to the current approach to agricultural regulation.[26] Notably, the report recommended that: 1) the federal government take the lead on regulating agriculture; 2) licensing schemes be adapted to promote a diversity of cultivators, including small-scale farmers; and 3) environmental protection be promoted through regulations that include licensing and supporting outdoor farmers.[27] If implemented, the recommendations would represent a markedly more diverse and inclusive approach to marijuana agriculture regulation.

This essay proceeds accordingly. In Part II, a brief history of marijuana prohibition, legalization, and regulation in the U.S. and Canada is provided and contrasted. Part III paints a picture of marijuana agriculture regulation in the U.S. by exploring approaches in three states (California, Colorado, and Washington) where regulatory frameworks for cultivation are relatively developed.[28] Part IV tells the Canadian story (where agricultural production is, for now, scarcely permitted), while looking ahead to impending regulations for recreational marijuana.[29] Part V concludes by drawing out common regulatory successes and failures, with an eye toward lessons learned that can inform the future development of marijuana agriculture regulations in the United States and Canada.

II. DIVERGENT PATHS TOWARD CRIMINALIZATION AND LEGALIZATION: A BRIEF HISTORY OF MARIJUANA IN THE UNITED STATES AND CANADA

While regulatory approaches to marijuana in the U.S. and Canada are nascent, cultivation of marijuana is centuries-old.[30] One of humanity's oldest cultivated crops, marijuana can be traced back 12,000 years to hunter-gatherers who appreciated its nutritious and psychoactive properties.[31] In Neolithic times marijuana traveled from its roots in China and Siberia along the Silk Road to the Middle East and Europe.[32] Once there it flourished in classical Greek, Roman, and Arab societies.[33] European colonialism cemented marijuana as a global

26. *Id.* at 4.

27. *Id.* at 4.

28. *Infra* Part III.

29. *Infra* Part IV.

30. This section draws on previous research addressing marijuana agriculture. *See* Ryan B. Stoa, *Weed and Water Law: Regulating Legal Marijuana*, 67 HASTINGS L.J. 565 (2016); Ryan B. Stoa, *Marijuana Agriculture Law: Regulation at the Root of an Industry*, 69(2) FLORIDA L. REV. (forthcoming, 2017); and Ryan B. Stoa, *Marijuana Appellations: The Case for Cannabicultural Designations of Origin*, 11(1) HARV. L. & POL'Y REV. (forthcoming 2017).

31. Barney Warf, *High Points: An Historical Geography of Cannabis*, 104 GEOGRAPHICAL REV. 415, 419 (2014) (citing ERNEST L. ABEL, MARIHUANA: THE FIRST TWELVE THOUSAND YEARS (Plenum Press 1st ed. 1980)).

32. *Id.* at 419–20.

33. *Id*. at 423 (citing JAMES L. BUTRICA, THE MEDICAL USE OF CANNABIS AMONG THE GREEKS AND ROMANS (Hawthorn 1st ed. 2006); D.C.A. HILLMAN PH.D., THE CHEMICAL MUSE (Thomas Dunne Books 1st ed. 2008); ERNEST L. ABEL, MARIHUANA: THE FIRST TWELVE THOUSAND YEARS (Plenum Press 1st ed. 1980);

commodity, spreading its cultivation, trade, and use throughout the Western Hemisphere and into what is now the United States and Canada.[34]

A. Prohibition and Legalization in the United States

Marijuana in the United States was for many years overshadowed by the other major derivative of its taxonomic species *cannabis sativa*: hemp.[35] While marijuana is primarily grown and used for its medicinal or recreational psychoactive properties, hemp strains are grown to produce food, textiles, paper, and other materials.[36] Queen Elizabeth required large landowners throughout the British Empire to grow hemp to counter Britain's reliance on Russian hemp imports;[37] later the Jamestown colonists would be required to do the same.[38] Both George Washington and Thomas Jefferson were hemp growers, and the Declaration of Independence was written on hemp.[39] John Adams was a prominent supporter of hemp cultivation, writing frequently about its benefits.[40] "Seems to me if grate Men dont leeve off writing Pollyticks, breaking Heads, boxing Ears, ringing Noses and kicking Breeches, we shall by and by want a world of Hemp more for our own consumshon," Adams wrote.[41]

Hemp and marijuana would continue to be grown throughout the 19th and early 20th centuries.[42] Like any other legal agricultural commodity, marijuana was subject to variations in state agricultural laws and policies. For example, the fact that a water rights dispute before the Supreme Court of Pennsylvania in 1852 involved a contractual obligation to use water solely for certain purposes that included a hemp-mill was found unremarkable by the court.[43] In 1947, a

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FRANZ ROSENTHAL, THE HERB: HASHISH VERSUS MEDIEVAL MUSLIM SOCIETY (Brill Press 1st ed. 1971)).

34. *Id.* at 425–26 (citing WILLIAM PARTRIDGE, CANNABIS AND CULTURAL GROUPS IN A COLOMBIAN MUNICIPIO (Mouton Publishers 1st ed. 1975); JOHNATHAN GREEN, CANNABIS (Thunder's Mouth Press 1st ed. 2002); JAMES H. MILLS, CANNABIS IN COLONIAL INDIA: PRODUCTION, STATE INTERVENTION, AND RESISTANCE IN THE LATE NINETEENTH-CENTURY BENGALI LANDSCAPE (Oxford University Press 1st ed. 2005)).

35. For a review of the taxonomy of marijuana and hemp, *see generally* Ernest Small & Arthur Cronquist, *A Practical and Natural Taxonomy for Cannabis*, 25 TAXON, no. 4, at 405, 410 (1976); Shannon L. Datwyler Ph.D. & George D. Weiblen Ph.D., *Genetic Variation in Hemp and Marijuana (*Cannabis sativa *L.) According to Amplified Fragment Length Polymorphisms*, 51 J. OF FORENSIC SCI. 371 (2006).

36. *See generally*, ROWAN ROBINSON, THE GREAT BOOK OF HEMP: THE COMPLETE GUIDE TO THE ENVIRONMENTAL, COMMERCIAL, AND MEDICINAL USES OF THE WORLD'S MOST EXTRAORDINARY PLANT 4 (1st ed. 1996).

37. Warf, *supra* note 31, at 426.

38. MARTIN A. LEE, SMOKE SIGNALS: A SOCIAL HISTORY OF MARIJUANA – MEDICAL, RECREATIONAL AND SCIENTIFIC 16 (1st ed. 2012).

39. *Id.* at 16, 18.

40. Corliss Knapp Engle, *John Adams, Farmer and Gardner*, 61 ARNOLDIA, no. 4, at 9, 10 (2002).

41. JOHN ADAMS, III. HUMPHREY PLOUGHJOGGER TO THE *BOSTON EVENING-POST* (June 20, 1763), *reprinted in* Papers of John Adams, Volume 1, at 7 (MASS. HISTORICAL SOC'Y ed., 2017)

42. By some accounts, it became the third largest cash crop in the United States by the mid-19th century. Lee, *supra* note 38, at 19.

43. Washabaugh v. Oyster, 18 Pa. 497, 503 (1852).

California tax dispute involved the development of wells for purposes of irrigating hemp.[44] The court overseeing the dispute thought the plan could "prove a profitable industry," before moving on to the legal matter at issue.[45]

But the widespread use of both hemp and marijuana in the United States catalyzed opposition to *cannabis sativa*'s legality from multiple angles. On the one hand, marijuana's early popularity with immigrants and bohemian communities produced reactionary prejudices that prompted crude public campaigns to criminalize the drug.[46] On the other hand, hemp's industrial versatility was a threat to the cotton industry and other producers of textiles.[47] Despite strong support in the medical and pharmaceutical industries, twenty-nine states banned *cannabis* between 1915–1931.[48]

The federal government then passed the Marihuana Tax Act of 1937, creating barriers to marijuana production, sale, and consumption.[49] The Supreme Court's ruling in *Leary v. United States* overturned the Marihuana Tax Act on the grounds that compliance would violate a person's right against self-incrimination.[50] The decision prompted Congress to repeal the Act and replace it with the Comprehensive Drug Abuse Prevention and Control Act of 1970, which categorized marijuana as a Schedule I narcotic with prohibitions on cultivation, sale, possession, and use.[51] Marijuana has been a black market crop ever since.[52]

Because states developed modern regulatory regimes in the latter half of the twentieth century,[53] after marijuana was criminalized, those regimes have never been regulated by the marijuana industry. This is true of many agricultural laws and policies as well, which have traditionally been dictated or influenced by federal agricultural policy. The pillars of agricultural law and policy set in motion in the twentieth century—crop subsidies, government-backed insurance, and direct relief payments—are still in place today.[54]

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44. Lerdo Land Co. v. Commissioner, 1947 Tax Ct. Memo LEXIS 16, *7 (1947).

45. *Id.*

46. Warf, *supra* note 31, at 429–30. *See also* REEFER MADNESS (Motion Picture Ventures 1936) (depicting the graphic horrors of marijuana use in ways that would appear satirical today).

47. Warf, *supra* note 31, at 429.

48. Walsh, *supra* note 5, at 19.

49. Marihuana Tax Act of Aug. 2, 1937, Pub. L. No. 75-238, 50 Stat. 551 (1937).

50. Leary v. United States, 395 U.S. 6, 13 (1969).

51. Comprehensive Drug Abuse Prevention and Control Act of Oct. 27, 1970, Pub. L. No. 91-513, 84 Stat. 1236 (1970); *see also* Walsh, *supra* note 5, at 23.

52. *See* Comprehensive Drug Abuse Prevention and Control Act of Oct. 27, 1970, *supra* note 51.

53. *See, e.g.*, Ryan B. Stoa, *Florida Water Management Districts and the Florida Water Resources Act: The Challenges of Basin-Level Management*, 7 KY. J. EQUINE, AGRIC., & NAT. RESOURCES L. 1, 74 (2015).

54. The Agricultural Act of 2014, which establishes agricultural spending for the next ten years, allocates $44.4 billion for commodity programs and $90 billion for crop insurance. Disaster relief funds were distributed a week after the Act was signed into law, including $100 million for livestock losses in California. Agricultural Act of 2014, H.R. 2642, 113th Cong. (2014); Brad Plumer, *The $956 Billion Farm Bill, In One Graph*, WASH. POST. (Jan. 28, 2014), http://goo.gl/gQOvl8 (on file with *The University of the Pacific Law Review*); Press Release, USDA: Obama Administration Announces Additional Assistance to Californians Impacted by Drought

Needless to say, the marijuana industry was not swept up in these initiatives. For the most part, marijuana cultivation in the United States for much of the twentieth century was conducted by small-scale farmers acting in violation of state and federal agricultural laws and policies.[55] Despite prohibition and a lack of government support, however, marijuana farmers have done quite well for themselves in the United States. A 2006 pro-marijuana study, focused on valuation, pegged the total value of domestic marijuana production at $35.8 billion, based on an estimate of over 56 million plants grown annually.[56] If accurate, the figures would make marijuana the largest cash crop in the United States, and a top five cash crop in thirty-nine states.[57] Today there are approximately 50,000 marijuana farms in the state of California alone.[58] There are as many marijuana farms in Humboldt County, California, as there are wineries statewide.[59]

The ineffectiveness of prohibition, combined with a public that is increasingly receptive to marijuana use, has led to a rapid shift in marijuana policy on the state level. Legalization is largely taking place through voter demands and ballot initiatives. California, perhaps not surprisingly, became the first state to legalize medical marijuana use when voters passed Proposition 215, the Compassionate Use Act of 1996.[60] Colorado and Washington became the first states to legalize recreational marijuana use in 2012, when voters passed Amendment 64: The Regulate Marijuana Like Alcohol Act, and Washington Initiative 502, respectively.[61] Following the 2016 election, and at the time of writing, medical marijuana use was legal in twenty-eight states, while eight states (plus the District of Columbia) had legalized recreational marijuana.[62] Only five states have maintained a strict prohibition policy on marijuana that does not allow for decriminalization or medical use of any kind.[63] While the federal

(Feb. 14, 2014), *available at* http://goo.gl/EdwPRg (on file with *The University of the Pacific Law Review*).

55. *See* Alissa Walker, *How Growing More Weed Can Help California Fix Its Water Problems*, GIZMODO (Oct. 12, 2015), http://goo.gl/ZEwFpT (on file with *The University of the Pacific Law Review*) (noting the estimated 50,000 pot farms in California alone).

56. Jon Gettman Ph.D., *Marijuana Production in the United States*, THE BULL. OF CANNABIS REFORM, Dec. 2006, at 1, 13. Those estimates have been questioned, with production valuations closer to $3–5 billion. *See* CAULKINS ET AL., MARIJUANA LEGALIZATION, WHAT EVERYONE NEEDS TO KNOW 41 (1st ed. 2012). *See also*, Michael Montgomery, *Marijuana Not Top U.S. Cash Crop: Book*, CA. WATCH, NBC BAY AREA NEWS, http://goo.gl/InOpuu (last visited July 22, 2017) (on file with *The University of the Pacific Law Review*); and PATRICK REA ET AL., THE STATE OF LEGAL MARIJUANA MARKETS (3rd ed. 2014).

57. Gettman, *supra* note 56, at 13.

58. Walker, *supra* note 55.

59. *Id.*

60. CAL. HEALTH & SAFETY. CODE § 11362.5 (Westlaw 2017); Cohen, *supra* note 9.

61. Colo. CONST. art. XVIII, § 16 (2012) (Colorado constitutional amendment 64); Wash. Initiative Measure No. 502 (2012); Szalavitz, *supra* note 10.

62. *29 Legal Medical Marijuana States and DC*, *supra* note 11; *Marijuana Overview*, *supra* note 11.

63. By "strict prohibition policy," I mean states that have passed neither decriminalization laws nor allow for non-psychoactive marijuana consumption for medical purposes. These states are Idaho, Indiana, Kansas, and South Dakota. *Marijuana Overview*, *supra* note 11; *State Medical Marijuana Laws*, *supra* note 12.

marijuana prohibition continues to suppress development of the marijuana industry, it is clear that state efforts to legalize marijuana will continue, creating demand for appropriate regulatory frameworks.

B. Prohibition and Legalization in Canada

Canada was similarly swept up in the anti-marijuana fervor of the early twentieth-century. As with the United States, prohibition of marijuana was partly motivated by race relations and fears that drug users would corrupt and violate innocent women and children.[64] Unlike the U.S., however, Canadian prohibition efforts were driven by the apparent connection between psychoactive drugs and Chinese-Canadian culture.[65] Prior to 1908, Canadians were free to purchase commercially available drugs such as opium and cocaine.[66] But the rancor between white and Chinese Canadians prompted a backlash against these and other drugs, and legislation quickly followed suit between 1908–1920.[67] This wave of drug criminalization culminated in the 1923 Act to Prohibit the Improper Use of Opium and Other Drugs, which listed marijuana as a prohibited substance.[68]

Canadian marijuana cultivation, use, and prosecution remained relatively dormant until the 1960s, when both consumption and prosecutions increased exponentially.[69] The Narcotic Control Act of 1961 was an attempt to crack down, increasing penalties and enabling prosecutions.[70] According to some, marijuana users became the primary target of law enforcement during the 1960s.[71] Unlike in

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64. CATHERINE CARSTAIRS, 'HOP HEADS' AND 'HYPES': DRUG USE, REGULATION AND RESISTANCE IN CANADA, 1920-1961, at 32–33 (2000).

65. *Id.* at 15.

66. *Id.* at 6.

67. These include the 1908 Opium Act, , the Opium and Drug Act of 1911, and the Opium and Narcotic Drug Act of 1920. Guy Ati Dion, *The Structure of Drug Prohibition in International Law and in Canadian Law*, Senate of Canada, Appendix 2 (Aug. 1999), https://sencanada.ca/content/sen/committee/371/ille/presentation/dion-e.htm (on file with *The University of the Pacific Law Review*).

68. *See also* Daniel Schwartz, *Marijuana Was Criminalized In 1923, But Why?*, CBCNEWS: HEALTH (May 3, 2014), https://goo.gl/7QKPdt (on file with *The University of the Pacific Law Review*); and Deborah Yedlin, *To Some, It's the Infamous Five*, THE GLOBE AND MAIL (Oct. 19, 2004), https://goo.gl/iLZDwu (on file with *The University of the Pacific Law Review*); *but see* Yolande House, "THE GRANDMOTHER OF MARIJUANA PROHIBITION" THE MYTH OF EMILY MURPHY AND THE CRIMINALIZATION OF MARIJUANA IN CANADA (2003), https://goo.gl/gYWYdn (on file with *The University of the Pacific Law Review*).

69. In 1962 there were a reported 20 cannabis-related prosecutions. In 1972 there were 12,000. Leah Spicer, *Historical and Cultural Uses of Cannabis and the Canadian "Marijuana Clash"*, Senate of Canada pt. II.B (Apr. 12, 2002), https://sencanada.ca/content/sen/committee/371/ille/library/spicer-e.htm (on file with *The University of the Pacific Law Review*).

70. Health Protection Branch, Dep't of Nat'l Health and Welfare, Cannabis Control Policy: A Discussion Paper (Jan. 1979), *available at* http://www.druglibrary.org/schaffer/library/studies/ccp/ccp_46.htm (on file with *The University of the Pacific Law Review*).

71. Benedict Fischer, Sharan Kuganesan & Robin Room, *Medical Marijuana Programs: Implications for Cannabis Control Policy—Observations from Canada*, 26 INT'L J. OF DRUG POL'Y 15-16 (2015).

the U.S., however, the controversial nature of marijuana prohibition, and its impact on convicted users, prompted a federal inquiry into marijuana policy reform.[72] The Le Dain Commission Report of 1972 called for a federal repeal of the marijuana prohibition on personal cultivation and use.[73] While not adopted by subsequent governments, the report prompted calls for decriminalization and legalization on a national level, and set the stage for judicial intervention.[74]

Terrance Parker suffered from epilepsy and frequent seizures.[75] He attempted to control the seizures through surgery and conventional medications, but found that only marijuana was an effective treatment.[76] Not having a legal source of marijuana, Parker grew it himself, and was subsequently charged with violating federal marijuana prohibition laws.[77] His appeal reached the Court of Appeal for Ontario, whose remarkable decision in *Regina v. Parker*, 49 O.R. (3^{d}) 481 [2000], deemed the federal prohibition of marijuana unconstitutional on the grounds that prohibiting medical use in cases where it is necessary represents a deprivation of liberty, security, and fundamental justice.[78] The Court characterized Canada's experience with marijuana regulation as "an embarrassing history based upon misinformation and racism."[79] The prohibition on marijuana possession was invalidated, with a delay of the invalidity of one year provided so as to allow Parliament to craft appropriate regulatory legislation.[80]

Accordingly, the Medical Marihuana Access Regulations (MMAR) were passed in 2001.[81] Under the MMAR, medical marijuana could be provided if prospective patients' conditions were on the federal list of severe or chronic illnesses.[82] With a prescription, a patient could obtain marijuana directly from the government, or cultivate marijuana at home.[83] The system was problematic, however. Few patients qualified for prescriptions, and the supply of marijuana was inconsistent.[84] Many continued to obtain marijuana outside of the federal program.[85]

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72. *Le Dain Report on Drugs Divides Cabinet*, CBC, http://www.cbc.ca/archives/entry/ledain-report-on-drugs-divides-cabinet (last visited July 22, 2017) (on file with *The University of the Pacific Law Review*).

73. Gerald Le Dain, Heinz Lehmann & J. Peter Stein, *The Report of the Canadian Government Commission of Inquiry into the Non-Medical Use of Drugs – 1972*, SCHAFFER LIBRARY OF DRUG POL'Y (1972), https://goo.gl/CaZzqk (on file with *The University of the Pacific Law Review*).

74. *Le Dain Report on Drugs Divides Cabinet*, *supra* note 72.

75. Parker, *supra* note 14, at ¶ 3.

76. *Id.*

77. Id.

78. *Id*. at ¶ 10.

79. *Id*. at ¶ 126.

80. *Id.* at ¶ 21.

81. Fischer, *supra* note 71, at 16.

82. *Id.*

83. *Id.*

84. *Id.*

85. *Id.*

In *Regina v. J.P.*, 64 O.R. (3d) 757 (2003), the Court of Appeal for Ontario found the MMAR insufficient to overcome the deprivations of liberty, security, and fundamental justice created by preventing patients from accessing medical marijuana.[86] Subsequent decisions reinforced this point,[87] including a 2008 decision invalidating the MMAR's provisions severely restricting the supply of marijuana.[88] The opinion noted that while the government may have an interest in regulating the size and number of cultivators, its regulations cannot be so restrictive so as to preclude access to medical patients.[89]

Reform of the MMAR came in 2014 with passage of the Marihuana for Medical Purposes Regulations (MMPR).[90] The MMPR broadens the pool of potential medical users by authorizing licensed physicians to prescribe marijuana for conditions they deem appropriate, doing away with the MMAR's limited list of conditions.[91] In addition, the MMPR withdrew the government as a marijuana supplier, and instead tasks Health Canada with licensing and regulating cultivators.[92] Despite these changes, the supply of marijuana remains limited, partly due to the low number of licensed cultivators.[93]

While Canada's experience with federal medical marijuana legalization and regulation is mixed, the new Labour Party-controlled government (brought to power in 2015), is moving forward with promises to legalize and regulate marijuana for recreational use.[94] The Task Force on Cannabis Legalization and Regulation's 2016 report calls for an overhaul of the current regulatory framework for medical marijuana, opening the doors to small-scale farmers, promoting environmentally sound growing practices (such as outdoor farming), and envisioning a parallel market for hemp production.[95] It remains to be seen if full-blown legalization for recreational use will be implemented, but considering its importance in the Labour Party's campaign platform, legislation in the coming months appears likely.

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86. Regina v. J.P. (2003), 64 O.R. 3d 757, ¶ 17 (Can. Ont. C.A.).

87. *See* Regina v. Long (2007), 88 O.R. 3d 146, ¶ 4 (Can. Ont. C.A.).

88. Sfetkopoulos v. Canada (2008), FC 33, 399–400 (Can. Ont. Fed. Ct.).

89. "[I]t may well be that there could be justification for limiting the size of operations of designated producers, to facilitate supervision and inspection for quality and security. But any new regulations to this end will have to be justified as having a demonstrable purpose rationally related to legitimate state interests. No such justification has been offered . . . ." *Id.* at 409.

90. *Canada Medical Marijuana (MMPR) Guide: 25 Questions & Answers*, Leaf Science (Apr. 1, 2014), http://www.leafscience.com/2014/04/01/canada-medical-marijuana-mmpr-guide-25-questions-answers/ (on file with *The University of the Pacific Law Review*).

91. *Id.*

92. *Id.*

93. *Authorized Licensed Producers of Cannabis for Medical Purposes*, *supra* note 20; *Application Process: Becoming a Licensed Producer of Cannabis for Medical Purposes*, *supra* note 21.

94. *A Framework for the Legalization and Regulation of Cannabis in Canada*, *supra* note 4, at 2.

95. *Id.* at 4.

III. SUBNATIONAL APPROACHES TO MARIJUANA AGRICULTURE REGULATION IN THE UNITED STATES

Because the U.S. federal government has not pursued a national approach to marijuana legalization and regulation, the U.S. experience is limited to those of the individual states. However, because many states have recently passed legislation and are actively addressing marijuana agriculture more or less independently of one another, there are a diversity of regulatory approaches to compare. This section will profile three states in particular: California, which legalized medical marijuana use in 1996 and recreational use twenty years later in 2016;[96] Colorado, which legalized medical use in 2000 and recreational use in 2012;[97] and Washington, which legalized medical use in 1998 and recreational use in 2012.[98] These states were selected because they have a relatively meaningful history of marijuana regulation, they have significant numbers of marijuana farmers, and they have taken different approaches to the regulation of marijuana agriculture.

Despite their differing regulatory frameworks, all three states share a common feature: involvement of local governments in the regulation of marijuana agriculture. The cause is likely multi-faceted. States may want to foster a multitude of regulatory approaches in order to experiment with and identify those rules and regulations that might work best on the state level. In addition, since legalization has thus far taken place primarily by ballot initiative, legislatures may be politically hesitant to embrace the marijuana industry, and providing a strong role for local governments may be an effective means of reducing political conflicts.

In any case, local governments are likely to use their power to make ordinances as the primary legal mechanism to regulate marijuana agriculture. Ordinances have the force of law, and can be created to regulate a variety of local issues, such as public health and safety, land use, and use of public spaces. Counties or municipalities are granted the power to enact ordinances from state constitutions or state statutes. California regulations, for example, authorize local governments to enact local laws in accordance with the state statute.[99] Colorado grants extensive powers to city and county governments, allowing them to increase taxes or prohibit marijuana cultivation altogether.[100] Washington did not initially grant cities and counties the power to enact marijuana regulations, but

96. CAL. HEALTH & SAFETY CODE § 11362.1 (West 2016); CAL. HEALTH & SAFETY CODE § 11362.1 (West 2016).

97. Colo. CONST. art. XVIII, § 14; Colo. CONST. art. XVIII, § 16 (2012) (constitutional amendment 64).

98. Wash. Initiative 692 (1998); Wash. Initiative 502 (2012).

99. LEGISLATIVE COUNSEL'S DIGEST OF AB 266, (Oct. 9, 2015). "(a) Pursuant to Section 7 of Article XI of the California Constitution, . . . a . . . county may adopt ordinances that establish additional standards, requirements, and regulations for local licenses and permits for commercial cannabis activity." *Id.*

100. COLO. CONST. art. XVIII, § 16, subd. 5(e), 5(f).

many municipalities took it upon themselves to enact their own regulations anyway, a practice that was subsequently upheld in *Green Collar LLC v. Pierce County*.[101] The participation of local governments in the regulation of marijuana agriculture is likely to continue as states delicately move forward with legalization.

A note on a fourth approach being used by a number of states with nascent marijuana regulation frameworks is worth mentioning briefly. While California, Colorado, and Washington are developing laws to allow for a broad farming community, states like Florida,[102] New York,[103] and Ohio[104] would limit cultivation licenses to less than a dozen. This type of approach allows the state to carefully select responsible cultivators, makes it easy to monitor cultivation, and buys time before presumably shifting to a more expansive model. With so few cultivators, states can lavish regulatory attention on the licensees to ensure compliance, or craft site-specific rules depending on the needs and cultivation infrastructure of the operation.[105] And in a sense the system is predictable by making it clear that only a select number of businesses may cultivate marijuana.

There are two major drawbacks to this model. Although limiting cultivation licenses might promote sustainability and reduce the regulatory burden, it is hard to find equity or public support when the state permits only a small handful of cultivators to participate in the market. Ohio's 2015 constitutional amendment initiative to legalize marijuana included a list of landowners who would have had exclusive rights to cultivate marijuana in the state.[106] The attempt to control the market prompted some legislators to introduce a constitutional amendment of their own that would prohibit the state's constitution from being used to create economic monopolies.[107] Voters rejected the legalization monopoly initiative

101. Green Collar LLC v. Pierce County, No. 14-2-11323-0 WL 8187081 (Wash. 2014); *see also* Att'y Gen. Bob Ferguson, *Whether Statewide Initiative Establishing System for Licensing Marijuana Producers, Processors, and Retailers Preempts Local Ordinances*, AGO 2014 No. 2 (2014).

102. S.B. 1030, 2014 Leg., 2014–2016 Sess. (Fla. 2014).

103. A.B. A06357, 2013 Leg., 2013–2014 Reg. Sess. (N.Y. 2013); *see also* Catherine Rafter, *New York State Just Granted Five Medical Marijuana Licenses*, OBSERVER NEWS (July 31, 2015), http://goo.gl/JqBdtG (on file with *The University of the Pacific Law Review*).

104. *Programs: Cultivation*, OHIO MED. MARIJUANA CONTROL PROGRAM, http://www.medicalmarijuana.ohio.gov/cultivation (last visited July 15, 2017) (on file with *The University of the Pacific Law Review*).

105. In principle states can tailor any number of water or agricultural permits, but there is a limit to how extensive the specifications can be when administering large volumes of permit applications. *See* Gary D. Lynne, J. S. Shonkwiler & Michael E. Wilson, *Water Permitting Behavior Under the 1972 Florida Water Resources Act*, 67 LAND ECON. 340, 348 (1991).

106. The amendment's text includes the tax parcel numbers of the properties in question: "Subject to the exceptions set forth herein, there shall be only ten MGCE facilities, which shall operate on the following real properties: (1) Being an approximate 40.44 acre area in Butler County, Ohio, identified by the Butler County Auditor, as of February 2, 2015, as tax parcel numbers Q6542084000008 and Q6542084000041[. . .]." OHIO CONST. ART. XV, § 12 (proposed amendment to add section 12).

107. H.R.J. Res. 4, 131st Gen. Assemb., Reg. Sess. (Ohio 2015).

(which lacked support from some pro-legalization groups) while approving the anti-monopoly amendment.[108]

Even if the state transitions to a more permissive model eventually, the previously licensed cultivators will have a government-given leg-up on the competition. And while the state may have developed the capacity to create site-specific regulations under the restrictive model, those capacities would be less relevant when cultivation proliferates and a more comprehensive regulatory approach is needed.

More importantly perhaps, severe limitations on cultivation licenses ignore the existence and persistence of black market cultivators. If marijuana cultivation were not occurring to begin with, or were unlikely to take root, a limited licensing approach might be sensible. But marijuana is widely available in part because domestic cultivation is increasing across the United States, particularly on private lands.[109] With legalization efforts gaining momentum and spreading knowledge on cultivation methods, it seems unlikely that marijuana cultivation will remain dormant for long. Considering the size and growth of the marijuana industry, eradication of unlicensed marijuana cultivators is unlikely.[110] Limiting cultivation to a small handful of businesses offers transitional benefits, but is unlikely to be a sound long-term solution.

A. California

California represents the United States' largest marijuana agriculture region by a significant margin. California's 50,000 marijuana farms account for 60% of all marijuana grown in the United States.[111] According to one study, 80% of marijuana consumed in the U.S. in 2012 was grown in California.[112] However, it would be misleading to suggest that this growth has been a deliberate result of state agricultural policies. While recent reforms are progressively addressing marijuana agriculture issues in an attempt to make the industry strong and safe, for many years the legalization process was lacking in meaningful regulations.

In 1996, California voters passed Proposition 215, the Compassionate Use Act (CUA).[113] With the CUA California became the first state to legalize the

108. Matt Pearce, *Ohio Voters Soundly Reject Marijuana Legalization Initiative*, L.A. TIMES (Nov. 3, 2015), http://goo.gl/SQHO1x (on file with *The University of the Pacific Law Review*).

109. STRATEGIC INTELLIGENCE SEC., U.S. DEP'T OF JUST., NAT'L DRUG THREAT ASSESSMENT SUMMARY 25 (2014).

110. The DEA has described the shift in cultivation practices toward private lands as an obstacle to law enforcement and eradication. *Id.* at 26.

111. Alissa Walker, *How Growing More Weed Can Help California Fix Its Water Problems*, GIZMODO (Oct. 12, 2015), http://goo.gl/ZEwFpT (on file with *The University of the Pacific Law Review*).

112. According to one study, by 2010 nearly eighty percent of marijuana consumed in the United States came from California. Emily Brady, *How Humboldt Became America's Marijuana Capital*, SALON NEWS (June 30, 2013), http://goo.gl/529p1p (on file with *The University of the Pacific Law Review*).

113. CAL. HEALTH & SAFETY CODE § 11362.5 (West 2017).

medicinal use of marijuana, exempting patients and prescribing physicians from criminal prosecution.[114] The text of the act was short, and did not address how the state or local governments were intended to regulate the marijuana industry. It did not, for example, assign regulatory authority to an administrative agency, articulate limits on possession or cultivation, or propose a broad regulatory framework from which the state or local governments could operate.

In the wake of the CUA, a legal medical marijuana industry was created in California, and the industry experienced tremendous growth, notwithstanding the absence of any meaningful state regulations. But the CUA's omissions prompted the state legislature to enact the Medical Marijuana Program Act (MMPA) in 2003, which, among other measures, restricted the number of plants medical marijuana patients or designated caregivers could cultivate,[115] and assigned further regulatory authority to the Attorney General.[116] Even these limits, however, became legally ambiguous guidelines after the California Supreme Court ruled that the rights established by constitutional amendment Proposition 215 could not be limited by legislative act.[117] The upshot of these early experiments with marijuana legalization is that California's burgeoning marijuana industry has been more or less unregulated for twenty years.

Many farmers would welcome the security of being in compliance with state and local laws, while being distinguished from cartel operations or destructive "trespass grows" on public lands. As it stands, farms on private property remain vulnerable to police raids and asset forfeiture laws,[118] and are unable to take advantage of typical agricultural government services, such as crop insurance programs or pesticide-free certifications.

Fortunately, change is on the horizon in California. In January 2016, the Medical Marijuana Regulation and Safety Act (MMRSA) came into effect, with ambitious proposals to create comprehensive regulations for marijuana agriculture.[119] The MMRSA assigns authority for various regulatory responsibilities to a variety of state agencies, including the Department of Food and Agriculture, Department of Fish and Wildlife, Department of Public Health, and the State Water Resources Control Board.[120] Said the author of the bill, "cultivators are going to have to comply with the same kinds of regulations that typical farmers do. . .it's going to be treated like an agriculture product."[121] Many

114. *Id.*

115. S.B. 420 § 11362.77, 2003 Leg., 2003–2004 Reg. Sess. (Cal. 2003).

116. *Id.*

117. People v. Kelly, 77 Cal. App. 4th 390 (2010).

118. Adrian Fernandez Baumann, *A Carrot and Stick for Pot Farmers*, EAST BAY EXPRESS (Aug. 12, 2015), http://goo.gl/9SMmTN (on file with *The University of the Pacific Law Review*).

119. S.B. 643, 2015 Leg., 2015–2016 Reg. Sess. (Cal. 2015).

120. 2017 Cal. Stat. ch. 719.

121. *Assembly Members Urge Governor Brown to Sign Medical Marijuana Package*, NEWS CHANNEL 3, http://goo.gl/oq7fcN (last visited March 28, 2016) (on file with *The University of the Pacific Law Review*) (quoting Jim Wood, 2nd Assembly District).

considered the MMRSA to be a critical precursor to recreational marijuana use regulations that would be necessary should recreational use be legalized. That concern proved prescient.

In November 2016, California voters passed Proposition 64, the Adult Use of Marijuana Act (AUMA).[122] AUMA legalized marijuana for recreational use, and largely mirrored the MMRSA by delegating specific responsibilities to a broad array of state agencies. AUMA's cultivation regulations are also similar to the MMRSA's, requiring farmers to comply with environmental laws, pesticide restrictions, and licensing requirements. At the same time, AUMA calls for the state to create an organic certification program, plant labeling and tracking, and potentially designations of origin.

AUMA departs from the MMRSA in one important respect, however. While the MMRSA limited the total canopy size of indoor farms to half an acre, and outdoor farms to one acre, AUMA's drafters included a provision that would allow the state to issue Type 5 licenses. No canopy size limits are imposed on Type 5 licenses, paving the way for large-scale, industrial production of marijuana.[123] Large-scale cultivation may flood the market with cheap marijuana, but at the cost of quality control and the livelihoods of the state's many artisanal small-scale farmers. Type 5 licenses cannot be issued before 2023, so the state will have time to consider the issue. However, a battle between small-scale farmers and agricultural conglomerates seeking to take over the industry may loom large on these discussions.

B. Colorado

Colorado legalized recreational marijuana in 2012 by passing Amendment 64: The Regulate Marijuana Like Alcohol Act.[124] The alcohol analogy was a clever political tactic by legalization proponents, as it situates marijuana into the same seemingly benign category. However, the analogy may suggest a regulatory blind-spot. Unlike California, which has been recently proactive in acknowledging and regulating the agricultural side of the marijuana industry, Colorado has employed a more piece-meal approach to agricultural regulation.

In order to thoughtfully develop legislation for a legal marijuana market in Colorado, a task force was established to investigate legal and regulatory issues and propose legislative and executive actions. The task force appropriately identified some agricultural issues,[125] such as the need to regulate pesticides and waste products, tax cultivators, and establish cultivation limits,[126] but broader

122. Cal. Proposition 64 (California Adult Use of Marijuana Act of 2016).

123. *Id.* at § 26061(d).

124. The Regulate Marijuana Like Alcohol Act of 2012. COLO. CONST. art. XVIII, § 16.

125. STATE OF COLORADO, TASK FORCE REPORT ON THE IMPLEMENTATION OF AMENDMENT 64, (Mar. 13, 2013), *available at* http://goo.gl/HqWF2F (on file with *The University of the Pacific Law Review*).

126. Bryce Pardo, *Cannabis Policy Reforms in the Americas: A Comparative Analysis of Colorado,*

issues central to agricultural development (such as water use or permitted cultivation practices) were not addressed.[127]

Colorado has since struggled to develop a regulatory framework that efficiently assigns responsibilities among agencies. The state's experience with marijuana agriculture demonstrates the difficulty of regulating the industry's many facets. Colorado's Marijuana Enforcement Division, for example, is defined by its regulatory identification with marijuana, but not agriculture.[128] The state's Department of Agriculture, conversely, is equipped to regulate traditional crops but has received little guidance on how to address marijuana cultivation.[129] When the Department reached out to the federal Environmental Protection Agency (EPA) for guidance on which general crop group (e.g., herbs, spices, vegetables) marijuana fits into for purposes of pesticide regulation, the EPA could only state that marijuana fits into none of these groups.[130] Colorado's Marijuana Enforcement Division and Department of Agriculture are both state-level agencies that do not have sufficient interdisciplinary expertise at present. The challenge can be more pronounced at local levels where it can be difficult to establish regulatory capacity on one dimension, much less two.

Ultimately, Colorado's early experience with marijuana agriculture regulation is notable for the state's adoption of a vertical integration model. In other words, marijuana farmers were required to sell what they grew, and dispensaries were required to grow what they sold. For regulators, the advantage of vertical integration is that it reduces the number of marijuana businesses in operation, and makes it easier to track the supply chain from seed to sale. There are advantages for marijuana businesses as well—vertical integration increases profit margins by reducing the number of profit-seeking firms in the supply chain, while allowing for more control over inventory. Vertically-integrated businesses may also cut down on redundant business expenses. The vertical integration model is mandatory in Massachusetts, Maine, New Jersey, New Hampshire, and New Mexico.[131]

Washington and Uruguay, 25 INT'L J. OF DRUG POL'Y 727 (2014); *see* H.B. 13-1318, 69th Gen. Assemb., 1st Reg. Sess. (Colo. 2013). The task force's recommendations were largely adopted by the state legislature and passed in May 2013. H.B. 13-1317, 69th Gen. Assemb., 1st Reg. Sess. (Colo. 2013).

127. STATE OF COLORADO, *supra* note 125, at 47, 66.

128. *See* ENFORCEMENT DIVISION–MARIJUANA, COLO. DEP'T OF REVENUE, ANNUAL UPDATE (2015).

129. *See, e.g.*, COLO. DEP'T. OF AGRIC., FACTUAL AND POLICY ISSUES RELATED TO THE USE OF PESTICIDES ON CANNABIS, *available at* https://goo.gl/FgFwN2 (last visited Mar. 29, 2016) (on file with *The University of the Pacific Law Review*) (receiving little guidance from the federal EPA regarding pesticide regulations); and Letter from John W. Hickenlooper, Governor of Colorado, to Tom Vilsack, Secretary of the U.S. Dep't. of Agric. (Feb. 20, 2014), available at https://goo.gl/jQn4iD (on file with *The University of the Pacific Law Review*) (requesting assistance from the federal Department of Agriculture regarding industrial hemp cultivation).

130. COLO. DEP'T OF AGRIC., *supra* note 129.

131. 105 MASS. CODE REGS. 725.105 (2013) (see page 2 of guidance at http://www.mass.gov/eohhs/docs/dph/quality/medical-marijuana/municipal-guidance-august-2016.pdf); 10-144-122 ME. CODE R., § 6.4.1.1.2 (Maine Medical Use of Marijuana Program; dictates the amount of marijuana a dispensary is permitted to

On the other hand, the Colorado experience demonstrates that mandatory vertical integration has its drawbacks. It is significantly more expensive to finance a business that incorporates the cultivation, post-production, and retail sale of marijuana. By some estimates, it can be three to ten times more expensive to establish a vertically-integrated marijuana business than a retail dispensary.[132] More expertise is required to handle a diversity of marijuana business activities. And by wedding each stage of the supply chain together, risk is increased: failure in any one aspect of the business is likely to affect the other aspects as well. In general, it is unusual to require vertical integration, and the marijuana industry is one of the only sectors in which this occurs.[133]

In the early years of Colorado's medical marijuana market, when vertical integration was required, the regulatory requirements were so onerous that over a third of operators went out of business.[134] Other states, recognizing the costs and benefits, have opted to allow, but not require, vertical integration. Nevada has adopted this approach,[135] while Colorado eventually abandoned its initial vertical integration requirement.[136] Considering the nascent state of the marijuana industry, it may be useful to allow a diversity of approaches in order to collect evidence on how the industry might grow and stabilize in the future. The same can be said about regulating the industry as well, however: there is value in letting states experiment with a diversity of regulatory approaches.

Vertical integration is likely to have particular implications on the agricultural component of the marijuana industry. Where it is required, it will make cultivation one component of a broader marijuana business, while reducing the likelihood that marijuana can become one of several crops grown on a single farm. More and more farmers growing traditional crops are considering incorporating marijuana into their crop portfolio,[137] but in states where vertical integration is mandatory it seems unlikely that these farmers will want to devote

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grow); N.J. STAT. ANN. § 24:6I (West 2010) (New Jersey Compassionate use of Marijuana Act; permits approved alternative treatment centers to cultivate, grow, harvest and sell their own marijuana); H.B. 573-FN § 2, 2013 Leg., 2013 Sess. (N.H. 2013) (New Hampshire Use of Cannabis for Therapeutic Purposes; similar to NJ, does not include purchase as an acceptable activity by an alternative treatment center); N.M. CODE R. 7.34.4.8(A)(2) (2015) (New Mexico Medical Cannabis Program; focuses on the amount of plants a non-profit producer is permitted to grow, but does allow for usable cannabis trade from other licensed producers).

132. Whit Richardson, *Pros and Cons of Vertical Integration*, 4FRONT ADVISORS, http://goo.gl/3GRuo0 (last visited Mar. 28, 2016) (on file with *The University of the Pacific Law Review*).

133. *Id.*

134. *See* John Ingold, *Colorado Lawmakers Question Proposed Marijuana Business Rules*, THE DENVER POST (Mar. 21, 2013), http://goo.gl/TSLZkW (on file with *The University of the Pacific Law Review*); and Tim Sprinkle, *For Cannabis Entrepreneurs, Industry Expansion Brings Growing Pains*, YAHOO FINANCE (Mar. 11, 2013), http://goo.gl/7vrbDh (on file with *The University of the Pacific Law Review*).

135. S.B. 374, 2017 Leg., 2017 Reg. Sess. (Nev. 2017); Nev. Rev. Stat. § 453A.200(3) (2017) (allows retailers, cultivators and in limited cases users to produce usable marijuana).

136. Ingold, *supra* note 134.

137. *See, e.g.*, Rob Hotakainen, *With No Federal Water, Pot Growers Could be High and Dry*, MCCLATCHY WASH. BUREAU (Apr. 27, 2014), http://goo.gl/Saqphi (on file with *The University of the Pacific Law Review*).

their resources to post-production and retail in order to do so. The effect is that the marijuana industry remains introverted, minimally engaged with the broader agricultural community. On the other hand, the supply of marijuana is presumably less likely to fluctuate wildly relative to demand if farmers are required to sell what they grow. By tying cultivation and retail together, both activities may be more responsive to each other.

Nonetheless, there are promising benefits and concerning costs to vertical integration. Colorado eventually moved away from a vertical integration model, and now permits farmers to stick to what they know best: farming. But the state's regulatory framework for the marijuana industry lacks a proactive focus on the agricultural component of the marijuana industry, an oversight with environmental implications. Because Colorado's marijuana regulations promote indoor cultivation, the environmental impact of the marijuana industry has been significant. Indoor marijuana farms comprise over half of new demand for power.[138] Power providers and state regulators are scrambling to adjust to rapid changes in the energy sector caused by growth in marijuana agriculture.[139]

Nonetheless, Colorado should be lauded for continuing to study, tinker, and reform the state's regulatory frameworks for the marijuana industry. The experience is new for the state's policymakers and regulators, and a blueprint on how to regulate the industry does not yet exist. While vertical integration was problematic, and the environmental impacts of indoor agriculture persist, Colorado appears well poised to refine its regulation of marijuana agriculture to adapt to new realities.

C. Washington

When Washington voters passed Initiative 502 in 2012, legalizing the recreational use of marijuana, they authorized the state to concentrate regulatory authority over the industry into one primary agency, the Washington State Liquor Control Board.[140] Thus, while California represents the agency authority fragmentation approach, Washington represents the agency authority consolidation approach. The Washington State Liquor Control Board has been designated with primary authority to develop rules and regulations for marijuana, including aspects of marijuana agriculture, pursuant to legislation authorizing the "state liquor control board to regulate" marijuana.[141]

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138. Jennifer Oldham, *As Pot-Growing Expands, Electricity Demands Tax U.S. Grids*, BLOOMBERG BUS. (Dec. 21, 2015), http://goo.gl/JO0dte (on file with *The University of the Pacific Law Review*).

139. One Pennsylvania Public Utility Commissioner said, "We are at the edge of this [. . .] we are looking all across the country for examples and best practices." *Id.*

140. Part I of Initiative 502 authorizes the Liquor Control Board "to regulate and tax marijuana for persons twenty-one years of age and older, and add a new threshold for driving under the influence of marijuana." Wash. Initiative 502 (2012).

141. *Id.*

One of the benefits of centralized marijuana regulation is that it may provide clarity. The administrative agency assigned to (or created for the purposes of) marijuana regulation is aware of its broad mandate, other agencies are not confused by their rights and duties, and the private sector and other stakeholders can direct their attention to a single agency instead of navigating a complex web of agencies and rules.[142] A second benefit is that states can more clearly invest human and financial resources in a single agency, whereas distributing those resources across a network of agencies requires a more nuanced understanding of existing agency capacities and needs, and investments can more easily become politically influenced.[143] Third, because marijuana implicates a diversity of processes, including the regulation of cultivation, processing, distribution, retail sale, and consumption, as well as the agricultural, economic, and public health components of the marijuana industry, a single agency with authority over the industry as a whole is well-suited to coordinate regulatory activities and create a coherent legal framework as a whole.

Unfortunately, regulating marijuana agriculture has not been as neat as Washington may have initially expected. Inevitably, perhaps, the expertise and traditional functions of other agencies have created exceptions to the centralized agency paradigm. Washington's Department of Agriculture, for example, has taken an increased role in marijuana cultivation, establishing rules for pesticide and fertilizer use, agricultural worker safety, and waste disposal.[144] The Washington Department of Ecology has also suggested that marijuana farmers will be subject to the usual environmental regulations the department oversees.[145] While these developments may positively take advantage of each agency's expertise, the state would benefit from a regulatory framework that more clearly authorizes agencies with secondary responsibilities to engage in their areas of expertise.

Aside from this horizontal approach to regulation, Washington's vertical approach to regulation of the marijuana industry is similar to the regulatory organization of the alcohol industry. Cultivators cannot hold dispensary licenses, while dispensaries cannot hold cultivation licenses. Vertical integration, in other

142. *See* Todd S. Aagaard, *Regulatory Overlap, Overlapping Legal Fields, and Statutory Discontinuities*, 29 VA. ENVTL. L.J. 237 (2011) (discussing the problems with regulatory overlap, and the resultant duplicative regulation). *But see* Mark Holden, *FDA-EPA Public Health Guidance on Fish Consumption: A Case Study on Informal Interagency Cooperation in "Shared Regulatory Space"*, 70 FOOD & DRUG L.J. 101 (2015) (concluding that joint guidance in certain public health realms can yield benefits contrary to current literature on agency overlap).

143. Dan Walters, *California's Multiple Agencies Confusing*, THE SACRAMENTO BEE (Mar. 5, 2016), http://goo.gl/pzCzqW (on file with *The University of the Pacific Law Review*).

144. *Pesticide and Fertilizer Use on Marijuana in Washington*, WASH. ST. DEP'T. OF AGRIC., http://goo.gl/qmh1c7 (last visited Mar. 29, 2016) (on file with *The University of the Pacific Law Review*).

145. *Marijuana Licensing and the Environment*, WASH. ST. DEP'T OF ECOLOGY, http://goo.gl/hBZj6b (last visited Mar. 29, 2016) (on file with *The University of the Pacific Law Review*).

words, is prohibited.[146] The model is similar to regulation of the alcohol industry, where there is a mandatory delineation between producers, distributors, and retailers.[147] The idea is that by breaking up supply chain integration, businesses have less incentive to promote alcohol or drug abuse, and each group can focus on providing goods and services in their area of specialization. The model has had limited success in the alcohol industry, where distributors have become powerful middlemen and may be dampening the potential for innovation. However, it does not yet appear that interest groups in the marijuana industry have obtained and exerted undue power over Washington regulators, providing hope that the state's regulatory model will be sustainable in the long-term.

IV. A NATIONAL APPROACH TO MARIJUANA AGRICULTURE REGULATION IN CANADA

In contrast to the United States' state-led legalization and regulation efforts, Canada's regulatory regime lies primarily on the national level. As required by judicial decisions in *Regina v. Parker*, *Regina v. J.P.*, and *Sfetkopoulos v. Canada*, among others, the Canadian government implemented a framework for regulating the marijuana industry. With regard to Canada's approach to marijuana agriculture, the Marihuana for Medical Purposes Regulations (MMPR) reformed the Medical Marihuana Access Regulations (MMAR) in several important respects.

A. Cultivation Requirements of the Medical Marihuana Access Regulations

The MMAR, established in 2001, was a very limited medical marijuana scheme. Because the enumerated medical conditions that would qualify for marijuana treatment were so few (and relatively rare), Health Canada (tasked with administering the program) was not overly concerned about developing a robust supply chain. Approved medical marijuana patients could obtain marijuana from three sources: they could grow it themselves, a "designated supplier" could grow it on their behalf, or it could be purchased directly from Health Canada. This cultivation framework was problematic in several ways. First, the MMAR's limits on home cultivation were excessively complex, using formulas instead of straightforward plant and storage quantity limits.[148] In addition to the confusing cultivation regulations, the application processes for both patients and designated suppliers were cumbersome, especially when compared to the relative ease many users experienced when purchasing

146. Wash. Initiative 502 § 5 (2012).

147. *See* Marihuana Medical Access Regulations, SOR/2001-227 (Can.).

148. *Id.*

marijuana on the illicit market.[149] When the market developed a work-around in the form of "compassion clubs" designed to collectively organize, grow, and supply marijuana on behalf of medical marijuana patients, the government cracked down and interpreted compassion clubs as a violation of the MMAR.[150]

Marijuana supplied directly by Health Canada was equally problematic. In order to meet its statutory obligation to provide access to marijuana to medical patients, Health Canada awarded a $5.7 million contract to a single company—Prairie Plant Systems (PPS)—tasked with cultivating marijuana on the government's behalf.[151] The results were underwhelming. PPS first proposed to base its farming operations at the bottom of a former zinc and copper mine in Manitoba, where tests had found elevated levels of heavy metal contamination in air, water, and soil samples.[152] The quality of the marijuana grown by PPS was suspect as well.[153] Although Health Canada claimed a THC content level of 10%, tests revealed THC levels were consistently lower, and some biological tests found mold and other biological impurities in the marijuana.[154] There was little evidence that Health Canada was testing the marijuana before delivering it to patients, despite charging a significant retail mark-up. And to make matters worse for patients, they were given no choice with respect to the marijuana's psychoactive characteristics or potency, strain, or cultivation method (e.g., organic).

The results of the MMAR's cultivation regulations were predictable. Of the few patients who were approved for medical marijuana use, very few of them obtained their marijuana from the government.[155] Most—over 80%—chose to grow their own supply.[156] Patients who purchased Health Canada's marijuana rated the quality of the marijuana received in very low terms, and many attempted to return the product for a refund.[157] From a broader perspective, it is clear that most Canadian marijuana users continued to obtain marijuana from the black market, despite the existence of the MMAR.

149. Fischer, *supra* note 71, at 16.

150. Philippe G. Lucas, *Regulating Compassion: An Overview of Canada's Federal Medical Cannabis Policy and Practice*, 5 HARM REDUCTION J. 5 (2008).

151. *Id.*

152. *Id.*

153. *Id.*

154. *Id.*

155. Fischer, *supra* note 71, at 16.

156. Lucas, *supra* note 150.

157. *Id.*

B. Cultivation Requirements of the Marihuana for Medical Purposes Regulations

These concerns led to an overhaul of marijuana regulations, culminating in the Marihuana for Medical Purposes Regulations (MMPR). The MMPR altered the regulatory landscape in several very significant ways. First, the MMPR abolished the MMAR's enumerated list of medical conditions that qualify a patient for medical marijuana use. Instead, the MMPR places the burden of diagnosis and treatment on medical professionals, a gate-keeping responsibility the medical community did not necessarily appreciate.[158]

Nonetheless, the relinquishment of the patient licensing process was accompanied by a renewed focus on cultivation regulations. This shift was accomplished in three steps. First, the MMPR eliminated the MMAR's personal cultivation or designated supplier provisions.[159] While some MMAR-sanctioned patients with home grows were grandfathered in, the MMPR's many new patients were no longer able to grow their own supply.[160] Second, the government eliminated its role as a marijuana supplier.[161] Criticisms of Health Canada and PPS—and the quality, price, and availability of their marijuana—were fierce, and it appears the government recognized that it had little to gain by involving itself as a market participant of sorts.

The chain of supply, therefore, was created in a third and final step. The MMPR adopted a new regulatory approach in which the government would act in a licensing and monitoring capacity over approved cultivators.[162] In this way, Health Canada maintains a strong regulatory presence over marijuana agriculture, without involving itself directly in agricultural activities. Unfortunately, the agency's complex bureaucratic requirements appear to be stifling cultivators from participating in the market. To date, Health Canada has only issued thirty-seven cultivation licenses nation-wide,[163] despite receiving 1,561 applications.[164] Eleven Canadian provinces have two cultivators or less.[165] Ontario, by contrast, contains twenty-four of the thirty-seven licensed cultivators.[166] This distribution

158. Fischer, *supra* note 71, at 16.

159. *Compare* Marihuana for Medical Purposes Regulations, SOR/2013-119 (Can.), *repealed by* SOR/2016-230, s. 281, *with* Medical Marihuana Access Regulations, *repealed by* SOR/2013-119, s. 267 (Can.).

160. *Id.*

161. *Id.*

162. *Id.*

163. *See Authorized Licensed Producers of Cannabis for Medical Purposes*, *supra* note 20.

164. *See Application Process: Becoming a Licensed Producer of Cannabis for Medical Purposes*, *supra* note 21.

165. *See Authorized Licensed Producers of Cannabis for Medical Purposes*, *supra* note 20. Five provinces have no licensed cultivators. *Id.*

166. *Id.*

is hardly equitable from a geographic perspective, nor is it likely to be supplying the demand for marijuana amongst the Canadian public.

The MMPR did make some positive changes to the previous regulatory framework. Health Canada does limit the strains sold by licensed cultivators, allowing for a more diverse product base for medical patients. In addition, the government is no longer a middleman marking up prices; cultivators are free to set their own prices as the market dictates. In other respects, however, the MMPR is overly restrictive. By prohibiting outdoor agriculture, cultivators are forced to artificially reproduce the light, soil, and water conditions found on outdoor farms. In addition, the MMPR only permits the cultivation and sale of dried marijuana. Derivative products often popular with medical users—such as resins, oils, and edibles—remain prohibited.[167]

C. Looking Forward to Legalization Legislation and Agricultural Regulations

The Labour Party-led federal government has promised to legalize and regulate recreational marijuana use. Not surprisingly, it may take some time to develop and implement this legislation, and it remains to be seen how the government will address marijuana agriculture. Still, early signs are encouraging. In August of 2016, the government adopted the Access to Cannabis for Medical Purposes Regulations (ACMPR).[168] While the ACMPR preserves the MMPR in many ways, it makes a simple but significant change by allowing medical marijuana patients to cultivate their own marijuana plants for personal consumption, or allow a designated supplier to do so on their behalf.[169] In this sense, the ACMPR incorporates the MMAR's personal cultivation allowances into the MMPR. While not an overhaul of the cultivation regulations in the MMPR, this tweak should improve access to marijuana while the country waits for legalization legislation to change the landscape.

If the Task Force on Cannabis Legalization and Regulation's report is any indication, the landscape change will be dramatic. The report calls for new cultivation regulations that reform the existing framework in at least two major ways: 1) licensing schemes should be adapted and made more flexible and permissive in order to promote a diversity of cultivators, including small-scale farmers; and 2) environmental protection and sustainability should be promoted through regulations that include licensing and supporting outdoor farmers.[170]

According to the Task Force, the first goal might be achieved by maintaining production controls, at least in the early stages of legalization.[171] The currently

167. *See Frequently Asked Questions*, *supra* note 23.

168. Access to Cannabis for Medical Purposes Regulations, SOR/2016-230 (Can.).

169. Part 2 – Production for Own Medical Purposes and Production by a Designated Person. *Id.* at 172.

170. *A Framework for the Legalization and Regulation of Cannabis in Canada*, *supra* note 4.

171. *Id.* at 32.

inadequate licensing scheme could be described as "maintaining production controls," which could foreshadow more of the same under a legalization framework. But the report's methods of production control are forward-thinking, calling for limits on facility size or growing areas.[172] These restrictions would have the additional benefit of supporting the development of small-scale, or artisanal, farming operations.[173]

With respect to environmental concerns, the report endorses outdoor agriculture as a more environmentally friendly method of cultivation. "In order to limit the environmental impact of the cannabis industry, outdoor production should be permitted."[174] Opening the market to outdoor farmers could also help diversify the supply chain and support small-scale farmers. Other than this measure, however, the report is light on other environmental considerations such as water and energy demands, organic certification programs, and pesticide regulations. The report's calls for small-scale cultivation and environmental stewardship are important steps in the right direction, but a far cry from the statutory or regulatory language that will address these and other pressing agricultural issues.

V. CONCLUSIONS

The United States and Canada are both trending toward an end to marijuana prohibition. A majority of U.S. states have legalized marijuana for medical use. Canada, meanwhile, is expected to introduce legislation to legalize and regulate marijuana for recreational use in 2017. And yet, it is clear that both countries are navigating the end of the prohibition era in drastically different ways. While the U.S. federal government is uninvolved in (and potentially antagonistic toward) the legalization movement, the states are flexing their collective political muscles in bucking the federal prohibition by adopting their own regulatory frameworks for the marijuana industry. Canada, meanwhile, was forced to create a national medical marijuana program by a series of judicial decisions. The track record of this program—the MMAR, MMPR, and ACMPR—is perhaps underwhelming, and reflects the government's ambivalence toward legalization and regulation. But, the current government is now firmly committed to marijuana reform, and a comprehensive regulatory framework appears to be on the way.

These divergent experiences inform the two countries' approaches to marijuana agriculture regulation. Because the U.S. experience has been state-led, a diversity of agricultural regulation frameworks has emerged. A few states have adopted a hybrid of the Canadian model, in which the state issues licenses to a

172. *Id.*

173. The report explicitly endorses measures that would prevent "the development of monopolies or large conglomerates." *Id.*

174. *Id.*

small number of cultivators so as to maintain control over the supply chain. It is unlikely this approach will remain sustainable over the long term as the marijuana industry evolves, but it may prove to be an effective training ground for state regulators. States with more developed marijuana agriculture industries are embracing the participation of larger numbers of cultivators.

California does not restrict the total number of farms in operation, but places limits on the amount of marijuana each farm can grow. The state has also decentralized its regulatory powers among various state agencies and local governments, so as to take advantage of institutional and local expertise and spread the burden of regulation.

Colorado, by contrast, experimented with vertical integration, an organizational framework that proved inefficient, and in many cases, unprofitable for cultivators and marijuana businesses. However, Colorado has been willing to adapt, abandoning the vertical integration requirement, and adopting various environmental protection measures.

Washington, finally, seeks to separate marijuana businesses into distinct categories, hoping to prevent the consolidation of the industry. At the same time, regulatory authority over the marijuana industry is concentrated and held by its state liquor control board, a choice that simplifies jurisdictional questions while at the same time requiring a high degree of sophistication and inter-disciplinarity from the agency itself.

Each of these approaches to marijuana agriculture regulation has its trade-offs. And, ultimately, what may work in California may not work in Colorado. In some ways the marijuana industry's growth may be facilitated by the U.S. federal marijuana prohibition as it forces states to experiment on their own and become incubators for new ideas and approaches to agricultural issues.

Canada, by contrast, has approached marijuana agriculture as a process to be tightly controlled. Starting with the MMAR, in which strict limitations were placed on personal cultivation, coupled with a government monopoly on larger-scale production. Although a small sample size, Health Canada's experience as a supplier of marijuana (via government contract with a third party supplier) suggests that governments should likely permit the private sector to participate in the agricultural process, ideally by supporting the development of many small-scale and sustainable farmers.

The MMPR's shift from government-as-marijuana-supplier to government-as-marijuana-cultivation-licensor was a welcome shift. However, the devil is in the details, and the MMPR's onerous regulations and licensing application process frustrated the expansion of marijuana agriculture in Canada. In addition, the law's indoor cultivation requirement needlessly shut out outdoor farmers who could have diversified the supplier base and provided an alternative model to compare to.

It appears the Canadian federal government has turned a corner and is ready to fully legalize marijuana for recreational use. While the government's Task

Force report is forward-thinking about several agricultural issues, it is light on details. The Parliament and its administrative agencies face a tough task, but past experiences, as well as models provided by the many U.S. states now experimenting with marijuana agriculture regulation, shine a light on the trade-offs and considerations regulators and the marijuana industry can expect to face.

A framework that prioritizes the development of a broadly inclusive agricultural community of small and medium-sized farmers, as well as environmentally sound agricultural practices, is a regulatory goal that is common across frameworks. Involving local governments likewise appears to be a sound approach. Otherwise, there are no easy choices as it concerns regulatory consolidation vs. decentralization or market integration vs. separation. Nonetheless, these choices are better informed by studying and reflecting on the experiences of neighboring jurisdictions. No approach is perfect, especially in these early days of the legal marijuana industry. But attention to the marijuana industry's most pressing agricultural questions, and how governments are answering them, will remain a critical step toward regulatory reform and refinement.