



Authors: Kenzi Riboulet-Zemouli, Simon Anderfuhren-Biget Ph.D, Martin Díaz Velásquez and Michael Krawitz.

Contributors: Olivier Bertrand M.D, Michal Brožka, Amy Case King, Swami Chaitanya, Genine Coleman, Chris Conrad, Julie P. Fry, Hanka Gabrielová, Kristen Garringer, Farid Ghehiouèche, Chris Halmo, Daniela Kreher, Marcin Krzyżkowiak, Hannes Lenhart and Kirstin Nevedal.

Graphic design: Marilyn Reina, Victor Aragon

© FAAAT think & do tank, Vienna.
March 2019 | 3rd edition, augmented.
1st edition: Vienna, December 2018.

ISBN 979-10-97087-34-0 | EAN 9791097087340

Some rights reserved. This work is available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; creativecommons.org/licenses/by-nc-sa/3.0/igo). Under the terms of this licence, you may copy, redistribute and adapt the work for non-commercial purposes, provided the work is appropriately cited, as indicated below.

Suggested citation: Riboulet-Zemouli K, Anderfuhren-Biget S, Díaz Velásquez M and Krawitz M (2019), "*Cannabis* & Sustainable Development: Paving the way for the next decade in *Cannabis* and hemp policies." FAAAT think & do tank, Vienna, March 2019. Licence: CC BY-NC-SA 3.0 IGO. Available at: <https://faaat.net/publications/9791097087340>

The views expressed in this report are those of the authors, not necessarily those of other contributors, supporters of FAAAT. FAAAT think & do tank is a registered non-profit in Paris Prefecture (France), referenced by Official Gazette (148e année, N°12, 19 mars 2016, N°1540, page 93) with SIREN number 822213013. For more information please contact info@faaat.net.

The printing of this 3rd edition is generously powered by Aurora Cannabis Inc.; CBDepot, s.r.o.; Ceres Limited; Deep Nature Project GmbH; Elixinol Europe; the European Industrial Hemp Association; Fields of Green for All; Hemp Industries Association; Hempoint; Hempro Int. GmbH & Co. KG; Hikurangi Cannabis Company; the Knowmad Institut; the Mendocino Appellations Project and Vote Hemp.

ZERO HUNGER

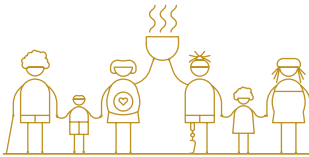
End hunger, achieve food security and improved nutrition and promote sustainable agriculture.





Target 2.1

By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.



Target 2.2

By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons.

Operational Recommendations from the UNGASS 2016 Outcome Document

3- supply
(b)

6- cooperation
(d)

The seeds of *Cannabis sativa* L. have been used as nutrition for thousands of years³² on all continents³³. Although the *Cannabis* seed has lost its place in our meals over the course of the XXth Century due to the overall reduction of *Cannabis* cultivation for all purposes on the coattails of prohibitionist policies, a comeback of “hemp seed” in various forms of food products and supplements has taken place. Research has identified so-called “hemp seed oil” as a **functional food**, while animal studies demonstrate the long-standing utility of the *Cannabis* seed as a **valuable and healthy**³⁴ food resource.

Cannabis seeds are generally composed of about 30% oil and 25% protein, with considerable amounts of dietary fiber, vitamins, and minerals. The “hemp seed oil” obtained by mechanical extraction, contains over 80% polyunsaturated fatty acids, being exceptionally rich linoleic acid (omega-6) and alpha-linolenic acid (omega-3) with an omega-6 to omega-3 ratio considered optimal for human health³⁵. The biological metabolites of the two essential fatty acids, gamma-linolenic acid and stearidonic acid are also present³⁶.

Besides the traditional ways of consumption (seeds used raw or roasted, pressed as oils or ground as flour; flowers used raw or in milk, teas, etc.), the high nutritional value of *Cannabis* seeds allow for fast **mass scale distribution of “hemp seed”-derived products to fight malnutrition**³⁷.

32 Schluttenhofer and Yuan, 2017.

33 See the example of South Africa: Coogan, 2016.

34 See also Target 3.4, section on “hemp and NCDs”.

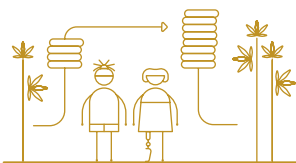
35 INFMP, 2017.

36 Callaway, 2004.

37 New Indian Express, 2018.

While value-added and productivity in general agriculture are relatively low compared to other sectors, incorporating “hemp” could increase productivity in that segment. For instance, the *Cannabis* plant produces twice as much fiber per acre as cotton and does not require irrigation. **Substituting cotton with non psychoactivity-related *Cannabis* crops would help increase productivity while drastically reducing water consumption for irrigation.** The cultivation of *Cannabis* for non psychoactivity-related purposes is already economically advantageous in a short-term perspective, allowing for non psychoactivity-related *Cannabis* crops to be a **tool for programs of agricultural transition.**

In peripheral and developing countries, a monitored transition to legal settings (as set out under Goal 1) would allow illegal *Cannabis* growers to **diversify their production** and to **locally supply *Cannabis* seeds-based products**, thus securing an essential food supply in impoverished areas.



Target 2.3

By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.



Target 2.4

By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.



Accelerate climate action for all Sustainable Development Goals.

Operational Recommendations from the UNGASS 2016 Outcome Document	
3- supply 3 (b) (d)	4- rights (i)
6- cooperation (d)	7- development (b) (h) (i) (j) (k) (l)

Taking advantage of the multiple uses of the plant.

The multiplicity of uses of the *Cannabis* plant allows, besides a diversification of finished products, to **rationalize plant wastes and overstock**, in particular, to implement sustainable crop management practices that increase vegetation production, reduce costs, build and maintain the quality of soils, and avoid the use of agrochemicals.

The **high biomass production of the *Cannabis* plant** sequesters carbon, helps control weeds, and added back into the soil can help build and improve the soil. Waste and overproduction can be turned into bedding and fodder for farm animals, helping to increase efficiency and income, while reducing costs for the farmer. Excess of plant biomass can be turned into biochar using a kiln and added back into the soil improving nutrient and water retention while giving more surface area for microbial growth³⁸.

Protecting the ecosystem with the *Cannabis* plant & policy reforms.

Chemical eradication programs launched in the name of reducing the supply of *Cannabis* plants have left farmable land arid and poisonous. Putting an end to such practices is the first step to recovery of agricultural productivity of all types of crops. Increased research also tends to show the benefits of the *Cannabis* plant for phytoremediation (i.e., cleaning up of soils, air, or water contaminated with hazardous contaminants)³⁹.



Target 2.5

By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed.



Target 15.6

Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed.

Operational Recommendations from the UNGASS 2016 Outcome Document

4- rights
(i)

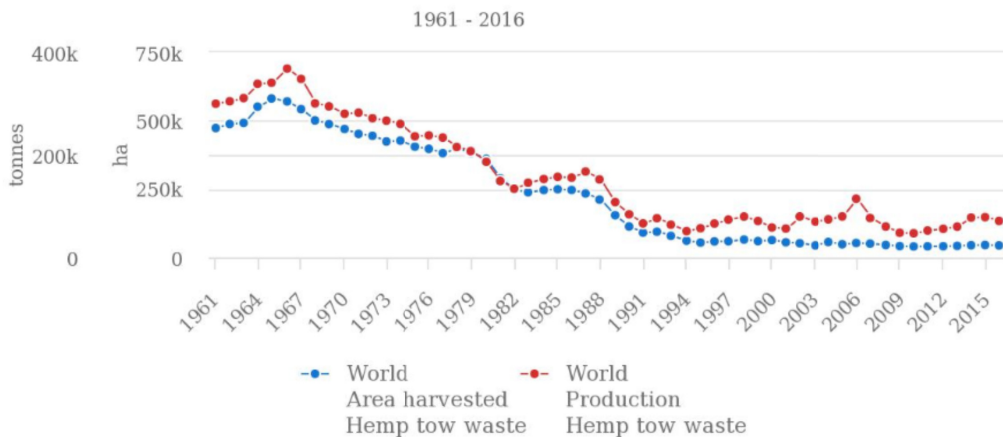
6- cooperation
(d)

³⁸ Amaducci et al., 2017.

³⁹ More details and references under Target 15.3

Encouraging the global discontinuation of the cultivation of a plant with such ethnobotanical importance is by far the least possible sustainable decision to take. Yet it has been an underlying goal of international drug control, in particular since the late 1980s, when the word “eradication” appeared in international fora, resolutions, and Treaties⁴⁰. Although the international drug system theoretically exempts all *Cannabis* plants grown for non psychoactivity-related purposes, the difficult implementation of such policies (due to the lack of botanical distinction between “hemp” and *Cannabis* for psychoactivity-related purposes) has led to a dramatic decrease in the world production of “hemp”, since the adoption of the 1961 Convention on narcotic drugs (see graph below⁴¹). This context has also dramatically impacted the biodiversity of *Cannabis*⁴².

Countries should firmly implement “hemp” policies relying on the total exemption from international drug control measures planned in the 1961 Single Convention on Narcotic Drugs⁴³.



Supporting community-based seed banks and initiatives to safeguard genetics.

According to Javaid Akhter Bhat from Sher-e-Kashmir University of Agricultural Sciences and Technology, “Plant genetic resource and associated traditional knowledge are the invaluable assets determining the global food security especially with expanding global population and climate change. They provide important genes/alleles governing resistance to biotic and abiotic stress that are usually available in wild species and landraces. A number of activities such as increasing population growth, urbanization, clearing of land, overgrazing, the cutting and smoldering of forests, indiscriminate use of fertilizers and pesticides, loss of habitat, climate change, war, and civil strife have impacted negatively that destroyed natural habitats and

40 “Each Party shall take appropriate measures to prevent illicit cultivation of and to eradicate plants containing narcotic or psychotropic substances, such as opium poppy, coca bush and cannabis plants, cultivated illicitly in its territory.” (UNODC, 2013. 1988 Convention, Article 14(2)).

41 FAO, 2018.

42 Clarke and Merlin, 2013.

43 UNODC, 2013. See Article 28.

threatened the genetic diversity of crop species as well as associated traditional knowledge. The plant genetic diversity has become highly vulnerable to “genetic erosion,” and traditional knowledge too faces serious levels of erosion. In addition, the plant genetic resources and associated traditional knowledge are subjected to misuse and misappropriation known as “biopiracy.” Therefore, to address these complex issues of plant genetic resources and traditional knowledge, a number of international instruments/policies have been developed over the years in the form of treaties, conventions, agreements, etc., to promote conservation and access of plant genetic resources and traditional knowledge. These policies also promote benefit sharing arising out of the utilization of these resources as well as prevent the misuse of plant genetic resources and traditional knowledge through intellectual property protection.”

This evidently includes *Cannabis*, in the case of which the above-mentioned threats are aggravated by decades of prohibition. **The new international policy context favourable to the protection of genetic resources, the rights of peasants⁴⁴, the rights of indigenous people, traditional knowledge (TK), traditional medicine (T&CM), and traditional cultural expressions needs to apply urgently to traditional *Cannabis* growers and their communities.**

Facing both anthropogenic and policy threats, farmers and *Cannabis* growers have organized globally in reaction to, in particular, the attempts of “eradication”. They **increased knowledge and know-how regarding the botany and genetics of the *Cannabis* plant**, and even created seed banks, contributing to the preservation and research on the plant’s genetic diversity.

In the State of California, at a critical moment in the development of its *Cannabis* policy regulations, farmers and policymakers are working to secure a statutory program which **safeguards communities’ genetic diversity and traditional knowledge** with rigorous intellectual property protections. Such a stakeholder-driven approach to genetic resources could lead to the development of labels such as Appellations of Origin (AO)⁴⁵ and set a precedent that could have significant repercussions throughout the world, including those in peripheral and developing countries.

Appellation of Origin applied to legacy *Cannabis*-producing regions fulfills the need to match *Cannabis* with the new framework of international legal instruments on genetic resources, the rights of peasants, traditional medicine, TK and cultural expressions – while expanding public access to associated production supply, including pharmaceutical preparations with verifiable production and product quality standards.

Other initiatives from civil society and the private sector have emerged, such as an archival record of existing *Cannabis* cultivars/chemovars⁴⁶, with the double aim to fill in gaps of the historic record and to preserve the genetic integrity of these cultivars/chemovars beyond the current trend of patenting *Cannabis* genetics *en masse*. Such initiatives should be supported internationally, even by countries that are still under prohibitive laws, in order to avoid excluding themselves from the benefits yielded by the development of *Cannabis*-related patent in the future.

44 Human Rights Council, 2018.

45 The World Intellectual Property Organization (WIPO) defines Appellations of Origin as “the geographical denomination of a country, region, or locality, which serves to designate a product originating therein, the quality or characteristics of which are due exclusively or essentially to the geographical environment, including natural and human factors.” in WIPO, s.d.

46 See: Open Cannabis Project at opencannabisproject.org

Ending registers of chemovars and restrictions over cultivation of *Cannabis* for food purposes.

To differentiate the psychoactivity-related from non psychoactivity-related *Cannabis* crops, decision-makers have generally chosen between three options: extending the prohibition to all types, limiting the maximum allowed percentage of Δ^9 -THC in the plant's products, or restricting "hemp" cultivation to a list of selected cultivars/chemovars. This latter method of allowing only registered strains to be cultivated, implemented in China, Canada, or the European Union⁴⁷, is an issue causing concern over the preservation of, and communities' rights over, genetic resources, practices, and knowledge associated with unregistered plant chemovars. It is also a barrier to innovation, research, and development of genetics of interest.

Likewise, it is important to note that there is no scientific evidence whatsoever showing that chemovars low in Δ^9 -THC produce better quality nor quantity of seed or fiber than the higher Δ^9 -THC plant chemovars. **Hemp crops should be differentiated from psychoactivity-related crops using the ratio methodology proposed by the UNODC**, which describes a "simple way of distinguishing between drug-type and fibre-type cannabis is by using the ratio of the main cannabinoids, THC, CBN and CBD"⁴⁸:

$$X = \frac{[THC] + [CBN]}{[CBD]}$$

$[THC]$	Area of THC in the chromatogram
$X > 1$	Drug-type cannabis
$X < 1$	Fibre-type cannabis

47 European Commission, 2019.

48 UNODC, 2009 p. 20, section 3.15 "Drug-type versus fibre-type cannabis." See also: De Meijer et al., 1992.