

CANNAVA MANAGEMENT REPORT 2020 - 2021



The year 2020 was pivotal in the project of medical-grade cannabis oil production carried out by the province through the estate-owned company Cannava.

In 2018, we started our journey to the production of the first medical-grade products of national industry, which are entirely elaborated in Jujuy lands, comprising all the stages in the production process, from the plant cultivation to its pharmaceutical industrialization.

During 2020, with a 100% state investment, a team of scientists, specialists and professionals from Jujuy achieved the following improvements and milestones.



01.

The genetic adaptation of the selected **and imported cannabis strains was achieved; and around half a tonne of cannabis flowers were harvested.** They came from the different cultivation trials, both in greenhouses and in the field, that were carried out in a total area of 1.5 hectares under inspection by the National Institute of Seeds.




02.

The province **built and equipped the first pilot laboratory for the production of medicinal derivatives of cannabis in the country with an extraction capacity of 2 kg of flowers per day.** The scientists of Jujuy who work in Cannava have already started operations to extract the oil and to formulate the active pharmaceutical ingredients derived from the plant. **So far, 61.4 kilograms of flowers have been processed, which gives us a total of 7 liters of crude CBD oil.**



03.

In parallel, we have built a 600 m² pharmaceutical plant dedicated only and exclusively to the processing of cannabis for its transformation into pharmaceutical-grade medicinal oils.



This **biotechnology complex** was entirely designed by Jujuy scientists and specialists who work at Cannava, following the guidelines of good laboratory practices for the manufacture of medicines and ISO 17025. The project was assessed and approved by the National Institute of Drugs and the National Administration of Drugs, **Foods and Medical Services (ANMAT)**. They will conduct the inspection and the final clearance this year.

In June of the current year, this **plant of pharmaceutical production of medicinal cannabis derivatives will be operational in the province.**

The plant will be the most important in the country and in the Latin American region, with a processing capacity of **45 kg of vegetal biomass per hour**, and relying on cutting-edge technology, quality control and European GMP certifications. The construction work of this pharmaceutical plant had a cost of **\$78,128,348.78 million Argentine pesos** and its equipment has already been acquired, for a total of **\$1.1 million dollars.**

This equipment includes pharmaceutical grade oil extractors, evaporators, distillers, microfluidizers processors, filling machines, among other equipment.

05.

Moreover, the province has already acquired the equipment for the **quality control of the entire process**. This equipment, which required an investment of **1.3 millions of dollars**, will arrive to Jujuy in June and includes the following:

- 1 HPLC Chromatograph
- 1 GC-MS Chromatograph
- 1 LC-MS Chromatograph
- 1 ICP-MS Spectrometer
- 1 UV-visible Spectrophotometer
- 1 FTIR Spectrophotometer
- 1 Microwave Digester

Cannava has developed, with the support of the National Institute of Industrial Technology (INTI), the guidelines and regulations that govern the whole process of quality, which is a fundamental aspect for the certification of ISO standards, good agricultural practices and good manufacturing practices, in line with the international standards applied nowadays globally.



The province has signed a training agreement with the Hebrew University of Jerusalem to train doctors, pharmacists, nurses and other health professionals through a course elaborated by the prestigious Multidisciplinary Center on Cannabinoid Research, which is

led by the discoverer of the endocannabinoid system, the scientist Raphael Mechoulam. The teams are preparing the course in Israel and we hope to launch the training in July of this year 2021.

06.



Besides, **in May of this year, the construction of the post-harvest** establishment will start and it will have the industrial capacity of processing and conditioning the plant material coming from the 35 hectares, prior to entering the laboratory for extraction. This work will require about **\$150 million Argentine pesos**. The province has already started the process to acquire the equipment, which includes destemmers, industrial trimmers, material drying chambers, among others. This equipment will have a cost of around **\$1 million dollars**.



During 2020, there will be **600 hectares** in production, and it is our intention to have **2,000 hectares** in production towards the year 2023.



In June, 15th Cannava will start the cultivation of the total 35 authorized hectares.

Cannava currently employs 60 people, of which 25 are agricultural workers. By starting the production in the 35 hectares, it is estimated that 50 new jobs will be created.

With the production in 600 hectares, we will create 1,800 jobs. Once the province reaches the 2,000 hectares, between 5,000 and 7,500 jobs will be generated in the province.

Medical Cannabis Work Team

The Medical Cannabis Work Team has been created and all the areas of the government and non-governmental institutions related to health have been called, such as the Medical College of Jujuy, the College of Pharmacists and the Jujuy Association of Medical Cannabis that brings together mothers who have been struggling for this issue since many years ago. The 3rd of May is the date set for this work team to present the special therapeutic program, which will include:

- **Models of continuous training of physicians and health professionals.**
- **Patient registry.**
- **Register of physicians.**
- **Register of other health professionals.**
- **Register of pharmacies.**
- **Models of prescription for medical cannabis. Online prescription.**
- **Clinical guidelines on prescription for medical cannabis according to diseases.**
- **Clinical guidelines on the dose for each disease. Models of pharmacovigilance.**
- **Clinical follow-up of patients.**
- **Models of distribution of medical cannabis in public hospitals of the province.**
- **Models of distribution of medical cannabis in pharmacies of the province.**
- **Intervention of the Insurance Institute of Jujuy to grant access to medical cannabis.**
- **Intervention of other medical insurances to grant access to medical cannabis.**
- **Guidelines on how to conduct clinical studies of the use of medical cannabis in diseases.**



10.

The province is also making a foray into scientific research for the implementation of cannabis medical-grade oils produced in Jujuy.



One of the projects was developed together with the **Foundation to Fight Neurological and Psychiatric Disorders (FULTRA)** for the clinical study of CBD use for treating older patients who suffered from COVID, so as to treat the cognitive impairment caused by this virus.

11.

We are also evaluating starting a **clinical investigation in the province to treat COVID patients using CBD produced by Cannava**, taking into account the results of the latest research carried out by the University of Chicago. According to this research, CANNABIDIOL (CBD) and one of its metabolites block the replication of COVID in lung epithelial cells, acting as an antiviral agent during the first hours of infection while protecting the host against overactive immunological system in the following stages.

CBD inhibited the viral gene expression and reversed many of the effects that the virus has on the patients' gene transcription. **CBD effectively eliminated the expression of viral RNA, including RNA that encodes the spike protein.**



Finally, towards July of this year 2021, the province will conduct its own plan of seed production through the program of genetic improvement and the germoplasm bank. This will allow us to greatly increase and improve Cannabis genetics that present a good performance within the production system of Cannava, in order to produce seeds for the use of the province.

This year, the medical-grade oils produced by Cannava will be delivered to all the **hospitals and pharmacies of the province**. Jujuy is pioneer in an issue that is a central point today in the global development agenda. **In the province, medical cannabis is a state policy.**

