



NICOLE "NIKKI" FREID
COMMISSIONER

Florida Department of Agriculture and Consumer Services
Division of Plant Industry

Permit # 36

INDUSTRIAL HEMP PLANTING PERMIT

Section 581.083, F.S./ Rule 5B-57.013, F.A.C.

Division of Plant Industry, PO Box 147100, Gainesville, Florida 32614-7100
Phone: (352) 395-4700

Permission is granted to South Florida State College and Hemp4Water

of Division of Arts and Sciences B-211, 600 W. College Dr. Avon Park, FL 33825
(mailing address: street, city, state, zip code)

To cultivate Industrial Hemp, Cannabis sativa. Permittee is required to meet all conditions outlined below and the specific requirements listed in the attached Industrial Hemp Pilot Project Proposal

South Florida State College Avon Park Campus:

Health Sciences building, chemistry lab 2nd floor
27°34'00"N, 81°30'19"W
Lab, storage and indoor cultivation

North side of Lake Glenada
27°34'05"N, 81°30'29"W
Outdoor cultivation (floating bio-mat ~9ft x 6ft)

South side of Lake Lelia
27°34'12"N, 81°30'12"W
Outdoor cultivation (floating bio-mat ~9ft x 6ft)

No expiration date for Industrial Hemp Planting Permit # 36 as long as:
cultivation site identified above is under continuous production of permitted plant species and in compliance
with all applicable permit conditions

The affixing of the signature below will validate this Permit. It shall remain in effect until it expires, or is cancelled,
revised as necessary, suspended, or revoked for noncompliance, in accordance with Section 581.083, Florida Statutes.

This permit shall expire on N/A: see above.

	<u>2/7/2020</u>
Division Director	Date



Hemp4Water™/South Florida State College Pilot Program Application

Summary: Hemp4Water™ is a research concept designed to prove the efficacy of using industrial hemp plants to remove excess nitrogen and phosphorus from the impaired rivers and lakes of Florida. These two nutrients are the top two contaminants of all our freshwater attributes. Hemp4Water™ is collaborating with South Florida State College to accomplish the first goal of research which is to quantify how much nitrogen and phosphorus a single industrial hemp plant will process on average while being situated on floating biomats floating directly on impaired water. The College will provide a research site, certified lab, lab technicians, several Ph.D. researchers, and other research resources to guide the research in an academic standard. Hemp4Water™ will provide the private contacts, research, knowledge, and materials unique to this project.

1. The summary, FWC description, and approval were supplied to provide the overall scope of the project. To be more specific: South Florida State College (SFSC) will, as stated, provide the resources needed to do the many tests that would be occurring, including but not necessarily limited to, nitrogen, phosphorus, and THC. As the pilot program statute stipulates, it is up to the individual schools to determine the requirements of the pilot programs they approve. SFSC has agreed that its very capable committee of scientists can determine the appropriate tests as research dictates while understanding the assumption that all federal and state guidelines will be followed. The experiments will be situated on floating bio-mats approximately 9 ft. x 6 ft. that are manufactured by Martin Ecosystems (www.MartinEcosystem.com). These mats are designed to be “floating islands” and fully contain the plants situated in them. We will be exploring both seed and clone growth on the mats and will address the seed concerns in the appropriate section. The mats will be located in the designated areas provided by coordinates and photos. The control will be conducted in the security of a campus lab to provide a baseline of controlled conditions. From start to finish, the team will develop tests and data points to ascertain the growth cycle and nutrient uptake so testing will be continual at all stages. Only members of the team, or their designated personnel, will be allowed to handle the plants. Considering that we will be dealing with a very limited number of plants at any given time, there will be a limited amount of plant material to experiment with. At the end of the grow, whatever agricultural products are left will be ground up, mixed with lime and water, and created into hempcrete for a secondary experiment opportunity. At this point, any of the plant material will be effectively destroyed regardless of its chemical content.

The goal of the pilot project is to substantiate an average nutrient uptake for a single plant using this type of growing situation. It is anticipated that a single plant will consume 200 kg of nitrogen and 160 kg of phosphorus during a growth cycle that will take approximately 90 – 120 days, depending on the strain and how long we allow the grow cycle to last. Seed production might very well prove to be when the plant requires the most nitrogen and phosphorus. The primary reason for Hemp4Water is to remove as much nitrogen and phosphorus as possible. Once this average is established and documented then we can expand the scope to a scaled application to begin removing metric tons of nutrients from our water systems.

2. Ultimately, Florida needs to be developing its own strains that are bred to work here. To accomplish this, we need to cross breed to find the right combinations. This project has identified three possible varieties that will fit the requirements. One is from China and already in Florida, the second is from Kentucky. Both of those have all the necessary documents. The third is a land race genetic that should be allowed to test for its viability because it may very well be the strongest. Considering that this is a pilot project with the goal of discovering and creating proper genetics, we would like to find, and add, a fourth variety for comparison. All seeds will be properly stored in the secure lab indicated below as Control Site #1, and accounted for. Given the level and stature of the project and the staff involved, it is assumed that all varieties will meet the thresholds of both federal and state guidelines and that the established protocols are met should there be a seed, variety, or plant that exceeds the arbitrary limit.

We are going to grow up to a maximum of 50 plants on each bio-mat. That will be the total exposure at any given time. There will be a limited number of times that a single seed embedded in a medium that will be placed in a single pot-holder, which will be contained within the bio-mat. These will be watched with utmost caution and care because of the nature of the research. All other instances will be sprouts or clones started indoors at Control Site #1, and then moved to the bio-mat. Again, the bio-mats are designed to hold/protect plant materials within its confines. If anything comes off the bio-mat, it will likely no longer be a viable living organism. In the event a hemp seed somehow escapes the three containers it would need to, an experiment specimen would be missing and the team would locate it. In the extreme off-chance a pre-sprouted seed does escape and is not located – regular monitoring for the rogue plant will occur. All research so far indicates the invasiveness of this plant is very low despite urban legends about how easy it grows. In this round or phase of research we will not take the outside or experiment plants to full seed discharge. We will do that in the Control Site #1, where all environment will be controlled. All outdoor plants will be harvested before seed discharge. Any plant removed from the bio-mat at any time for testing or harvest will be immediately transported via a closed container to the Control Site #1 by a member of the research team. Any seed or plant material not destroyed will be stored in a secure cabinet inside Control Site #1. When the grow is finished, the plants will be harvested and the bio-mats removed, leaving no plant materials left in the environment.

Transportation: seeds and or mother plants will be obtained via proper protocols set forth by the Florida Department of Agriculture. Documentation providing for origin and identity will be accompanied. Once the plants are on campus, they will become the custody of the team and will only be handled by the designated team. Any plant material not destroyed by on-going testing will be accumulated to the end in a secure locked cabinet awaiting final destruction which will consist of grinding the dried materials in small pieces, mixing with water and lime and forming into bricks to be cured for further study and research as a new material/compound.

Testing Schedule: In the event that some plant material tests too high for THC then it will be incinerated via scientific protocol and state protocol immediately. Testing will be occurring on a minimum of a weekly basis due to the nature of the question we are trying to answer. Data is the intent of this research therefore testing will be ongoing. Beginning week one and consistently there-after. So a minimum of once a week for the entire grow cycle which will be 60 days outside(not going to seed) and 90 days inside (going full term). The Control Site #1, is a fully functional lab. All tests not requiring 3rd party administration will be done on site. In the extremely unlikely event that one of these plants tests over the legal limits it will be incinerated via proscribed state standards immediately. We will give you a video if you want it. Plants that are not over the limit will still be destroyed but in a much more sustainable and reasonable fashion of turning them into hempcrete.

Entities and Individuals Involved

South Florida State College:

Lead Oversight Manager:

James Hawker, Ph.D.
Dean, Division of Arts and Sciences
B-211, 600 W. College Dr.
Avon Park, FL 33825
Phone: 863-784-7329
Email: James.Hawker@southflorida.edu

College Staff:

- Dr. Thomas Leitzel - President
- Dr. Sid Valentine - Vice President of Academic Affairs and Student Services
- Kendall Carson - Coordinator, Agricultural Programs
- Dawn Ritter - Environmental Sciences
- Dr. Ellen Cate Cover- Ph.D. in Zoology, MS Biology
- Dr. Mary Kate Calvin- Ph.D. in Molecular Biophysics

Hemp4Water™

Steve Edmonds, MS Political Science and Founder of Hemp4Water™
Hemp4Water, LLC and Hemp4Water, Inc. a Florida Non Profit
1022 Vannessa Drive
Oviedo, FL 32765
407-701-9045

Locations

The project will use multiple locations for comparative data analysis. Many of those locations are yet to be determined and it is our intent to submit addendums to this application as those site become available and secure. There are three sites identified for this study so far. They exist on the campus of South Florida State College in Avon Park, Highlands County. All the sites that we would like to begin with immediately are situated securely within the South Florida State College campus.

Test Site #1: North side of Lake Glenada located in Avon Park, Florida. The site would be located within the cove that has a water fountain. Approximate GPS coordinates: 27°34'05"N 81°30'29"W.



Test Site #2: South side of Lake Lelia located in Avon Park, Florida. The site would be located behind the SFSC Public Service Academy building. A dock extends out from SFSC property into the lake and the site would be located between land and the end of the dock ensuring that it is not in navigational waters. GPS coordinates: 27°34'12"N 81°30'12"W.



Control Site #1: Chemistry Lab located on the 2nd floor of the Health Sciences Building on the SFSC Avon Park campus. GPS coordinates: 27°34'00"N 81°30'19"W.



Chain of Custody of Hemp

The entirety of the plant life cycle will be maintained within the confines of the research project. All activities from seed propagation to final disposition of the plant will be under the supervision of the key persons listed above. Plants will be allowed to grow to various stages of maturity and then destroyed on site. At no time will any materials be made available to persons not associated with the project. The possibility of creating building materials from plant materials will also be explored.

Economic Impact of Study

The goal of the project is to quantify how much nitrogen and phosphorus a single hemp plant can process. Once that data is obtained, individual projects can be developed that will target the excess nutrients in our rivers and lakes. It is hoped that this will make a meaningful impact on the extraordinary occurrences of blue green algae and red tide outbreaks that cost our coastal community billions of dollars each year. In 2013 alone, the coastal communities affected by the Lake Okeechobee discharges experienced a loss of economic opportunity in excess of 5 billion dollars due directly to this problem.

When this study is successful it will lead to several projects that will be able to remove metric tons of nitrogen and phosphorus from our water. This, in turn, will result in a more balanced and healthy ecosystem which will lead to a positive economic impact by helping to prevent billions of dollars of damage and lost opportunity because of water with way too many nutrients in it.

Economic Impact Analysis: This is a basic study to answer a basic question. If we determine the answer to that question is that hemp does indeed metabolize 200kg of Nitrogen and 160kg of Phosphorus then we will need to figure out how to scale and apply that knowledge. That would be when an economic analysis of this research would be appropriate. That being said, this project will make estimates on what it would cost to scale and why we would want to make that investment. First, we need to prove it's possible.

Psychotropic Compounds

None of the plants we will be using will contain genetics that exceed the 0.3% THC thresholds proscribed by law and the definition of hemp. In the unexpected case of a plant exceeding those levels – it will be destroyed immediately.

Compliance

All work and research associated with this pilot project will be done in accordance to Florida Statue 1004.4473 and the Federal Farm Act of 2018 and rules provided by the Florida Department of Agriculture and United States Department of Agriculture.

Anticipated Outcomes

We expect that within a couple of grow cycles to have an educated estimate of the metabolism of the plants in relation to nitrogen and phosphorus. That will give us the data and reason to design and apply for an expanded project. At minimum, we hope to see each plant process 200 kg of nitrogen and 180 kg of phosphorus, or its required nutrient load on land, per life cycle according to data from Canada. When that is achieved, there will be real paths to cleaning our waterways.

Attachments:

Letters of support from College and FWC



January 7, 2020

To Whom It May Concern:

The South Florida State College District Board of Trustees endorses hemp exploration through the hosting of an applied research pilot project. We clearly see the economic benefits of hemp to our agricultural region. There are numerous opportunities for the advancement of hemp as an industrial crop, and we realize early experimentation with the beneficial uses needs to occur before widespread expansion is embraced.

At the District Board of Trustees meeting on November 20, 2019, the Board gave its unanimous endorsement during the President's Report after a briefing on the potential involvement of faculty and students in various applied research phases. College officials have assured the Board that they will operate in full compliance with the requirements and operations during the phases of the research project.

South Florida State College is excited about exploring the opportunities that the hemp industry could bring to the rural agricultural counties in the college's service district. Further, the economic and environmental benefits of agricultural hemp could translate into massive environmental benefits through water quality experiments along Florida's ridge and through the biomass opportunities that future growers of hemp could realize. The benefits to the State of Florida are huge, with the addition of a new \$35 Billion agricultural crop.

Any questions or concerns could be addressed to me through the Office of the President at South Florida State College. The entire District Board of Trustees is pleased to provide an endorsement to the early phases of industrial hemp research.

Sincerely,

A handwritten signature in blue ink that reads "Tamela C. Cullens". The signature is fluid and cursive, with a long horizontal flourish extending to the right.

Tamela Cullens, Chair
SFSC District Board of Trustees



December 9, 2019

Kendall Carson
Coordinator, Agricultural Programs
South Florida State College

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and Wildlife
Conservation
Commission**

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resources for their long-term
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800-955-8771 (T)
800 955-8770 (V)

MyFWC.com

Subject: Industrial hemp hydroponic pilot project

Dear Ms. Carson,

The Florida Fish and Wildlife Conservation Commission Invasive Plant Management Section has no opposition to the industrial hemp hydroponic pilot project as currently proposed in the provided December 5, 2019 Project Plan. Alternations to this plan would require a rereview.

It is the responsibility of the Invasive Plant Management Section to direct the Aquatic Plant Management Permitting program that authorizes the management and control of aquatic plants in waters of the state. This program is designed to ensure that beneficial native aquatic plants are protected and that activities under a permit or permit exemption do not cause adverse impacts to Florida's freshwater systems. Our rules and regulations pertain to the control, eradication, removal, or other alteration of aquatic plant species, as well as revegetation with aquatic plant species.

There are no issues found with the pilot project that conflict with Florida statute or rule (F.S. 360.20 and Chapter 68F-20, F.A.C.), provided that:

- 1) permission has been obtain from the adjacent riparian owner (South Florida State College) to locate the project along their shoreline,
- 2) the hydroponic mats will be placed in an area where they do not compete directly with existing native aquatic vegetation for resources, and
- 3) the hemp plants will not be planted into the hydrosol.

Should you like to discuss further, please do not hesitate to contact me at Geoffrey.Lokuta@MyFWC.com or 863-578-1122.

Best,

Geoffrey Lokuta
Biological Scientist III
Florida Fish and Wildlife Conservation Commission
Invasive Plant Management Section