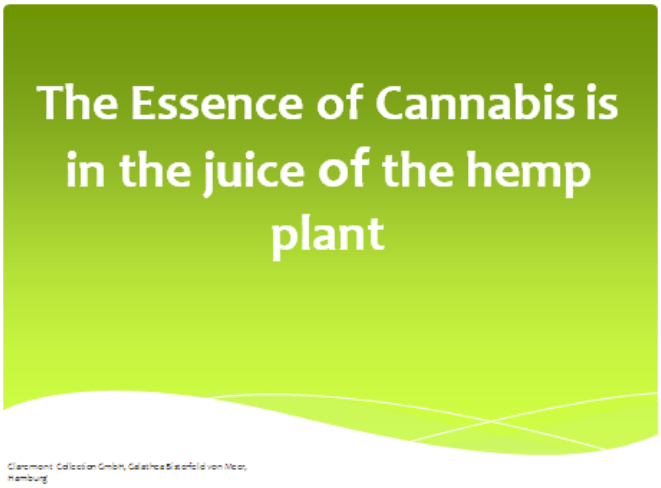
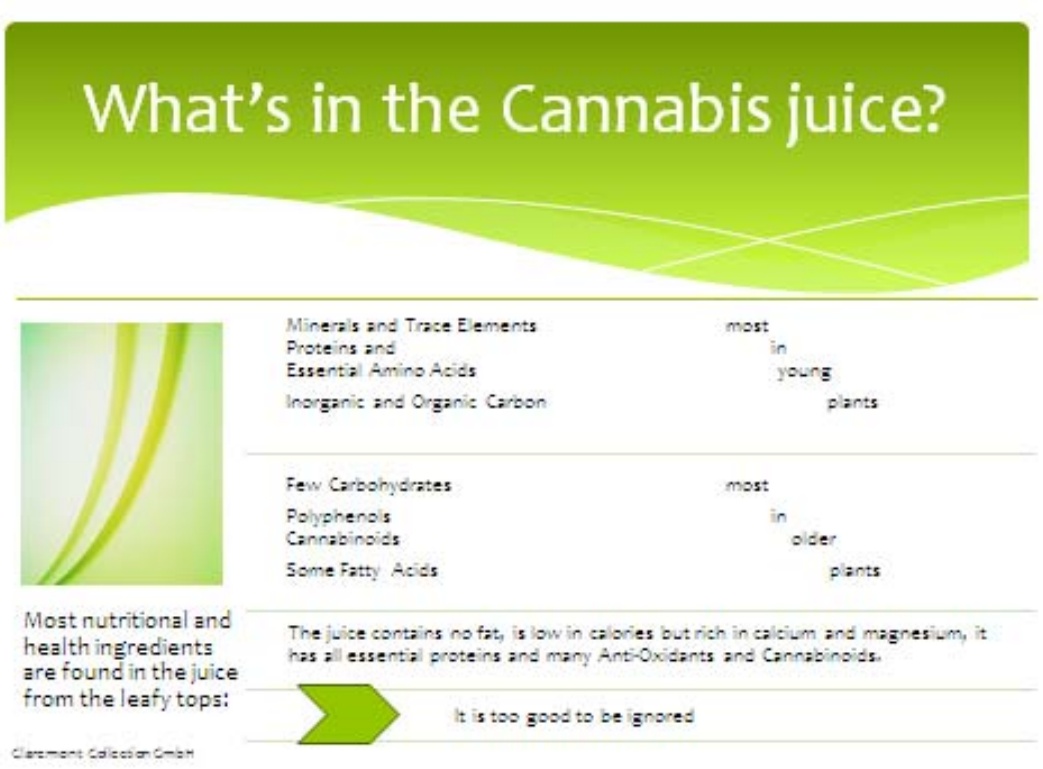
I started to get interested in hemp when a friend asked me for help in designing a factory for the production of hemp building material in her home country Kazakhstan.
Streamlining the process and not wasting anything brought about the invention I want to present to you today. As inventor I am convinced that looking at the freshly pressed hemp juice adds a completely new dimension to the utility of the Cannabis plant. I want to give you an idea of the additional value added to industrial THC free hemp.

As you will see: "The Essence of Cannabis is in the juice of the hemp plant".



First: What's in the pressed fresh hemp juice?

We experimented with Fedora 17 and Santhica 24 industrial hemp. These hemp strains are cultured for high fiber content, not high juice content. The amount of juice pressed from other Cannabis cultures may be quite different.



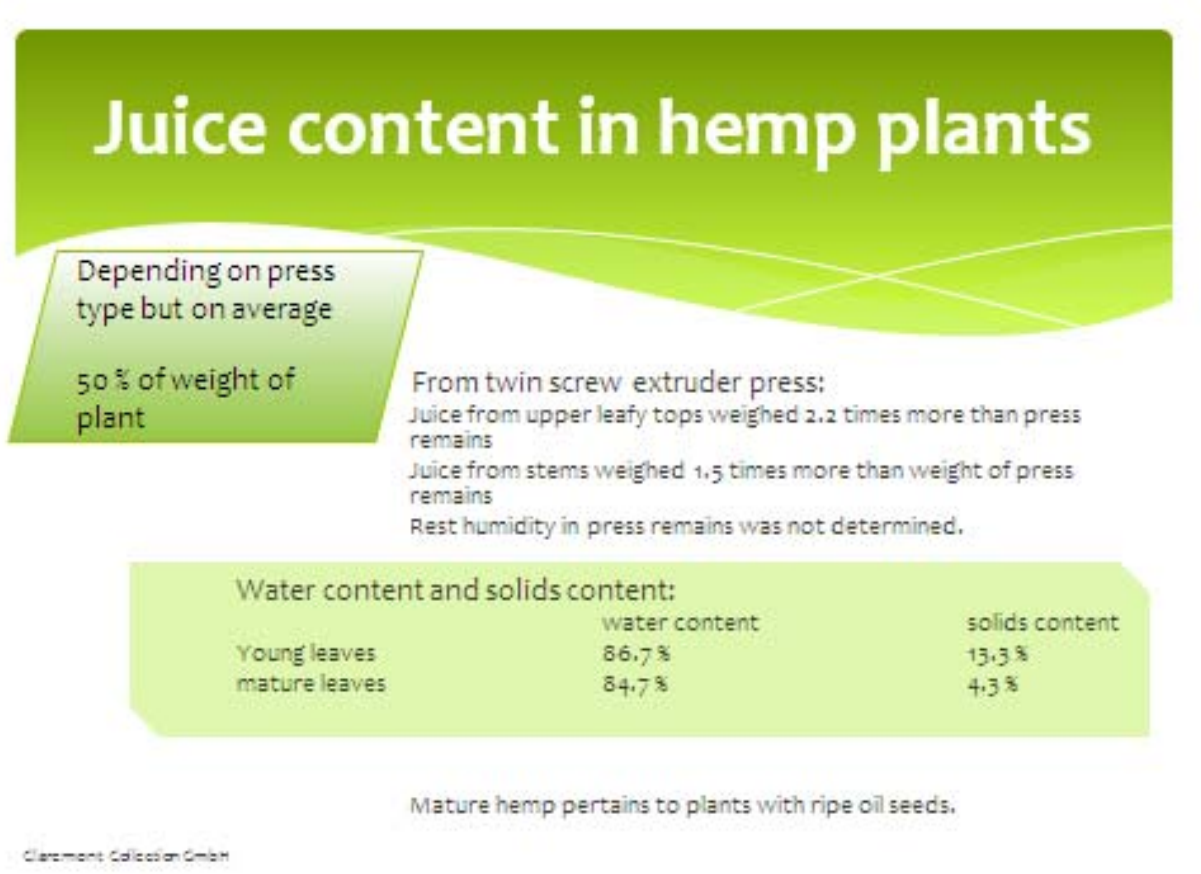
- Amount of juice

The amount of juice in the plant depends on the age of the plant. There is more juice in the younger plants and least after ripening of the seeds, there is more juice when hemp is pressed right after harvesting.

Depending on the type of juice press the resulting amount of juice differs. On average it is about half of the plant weight.

The twin-screw extruder yielded twice as much juice as press remnants. We did not determine the humidity content of the press remnants.

The ratio of the water content to the solids content indicated a relatively high solid content in young leaves and least in mature leaves with ripe seeds.

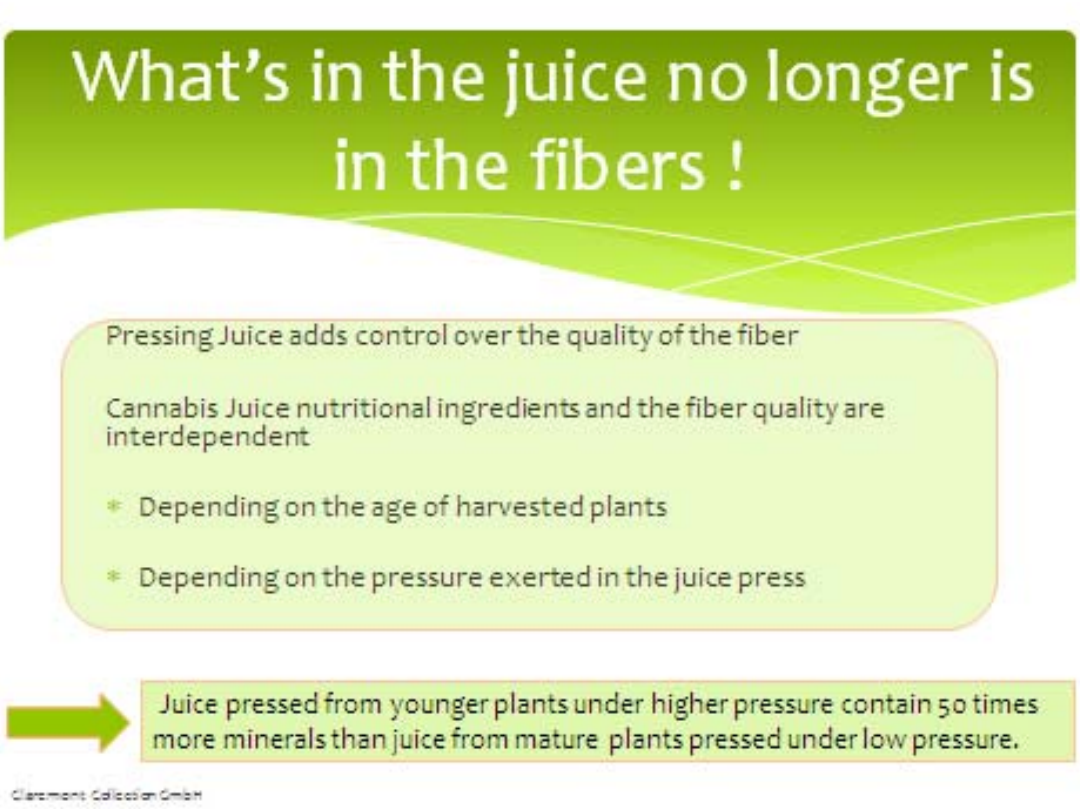


The industry demands dependable quality standards for the use of hemp fibers in paper, in textiles, in bio-plastics etc. In the traditional way of growing, harvesting and field retting hemp only a few factors can be controlled: the choice of hemp seeds, the soil, and the time of harvest.

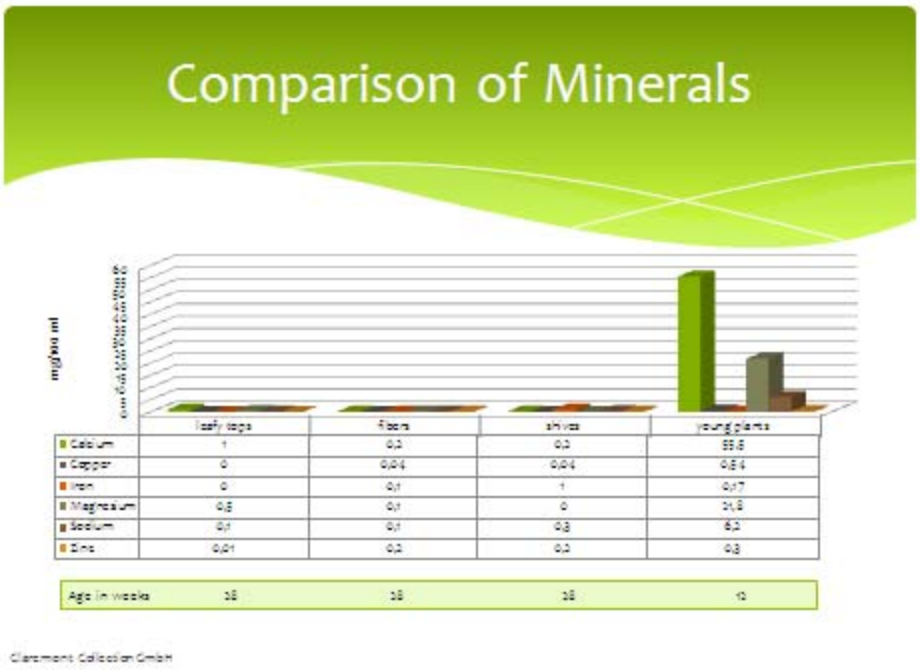
With the suggested new procedures more factors can be controlled to ensure dependable quality fiber and of course juice.

Juice in a true traditional value is not in competition with fibers and shives.

The time of harvest can be fine-tuned with “partial harvesting”.
With decortication in the green fibers are separated from shives and from leafy tops.
All separated plant parts are pressed individually. The choice of the press and the pressure exerted are additional controlling factors.



For example: harvesting 12 weeks old hemp and pressing under high pressure in a hydraulic cylinder press yields 50 times more minerals in the juice than 28 weeks old hemp pressed under low pressure. What's in the juice no longer is in the press remnants. Thereby controlling the press remnant quality whether it's fiber or shives or animal feed from leafy tops.



- Taste and Color

The juice of the leafy tops is of an intensive green color with three distinct color layers and it does not look appetizing at all (much like grass juice). It has a strong Cannabis odor. The taste is salty and bitter. It needs to be diluted and mixed for drinks.

The juice from the fibers and the shives tastes sweetish, the odor is of cut grass, and the color is clear light green. It would make a good mix with the juice from the leafy tops – but juice from the stems is not approved for human consumption in Europe for the time being.

The sugar content of the stems and leaves is around 22 degree Oechsle. In the mature plant 1 mg sugar / 100 ml juice was measured, glucosamine to fructose 2 : 1.

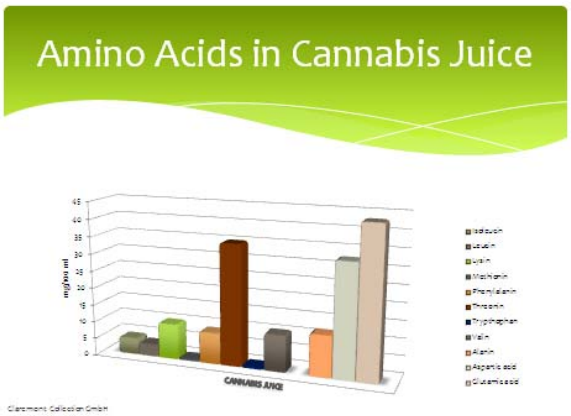
Hemp juice has UMAMI taste, some fullness that comes from the proteins, especially the high content of glutamate. It leaves a kind of smooth and pleasant lining inside the mouth that lingers on.
In a way this lining continues down into the digestive system and into the intestines where it has a wonderful effect: what Chinese medicine calls moistening of the intestines.

One of the scientifically proven effects of hemp juice and the fine filter remains is to enhance any salty taste. It works wonderfully in tomato juice or instant soups. The juice and also the remains from fine filtering can be mixed with quality salt and become a Cannabis-salt that should bring about some of the wonderful health effects of Cannabis.

The filtered juice is a fine base for all kinds of drinks, alcoholic and non-alcoholic. Add Cannabis juice instead of hops to beer brewing and obtain a fine bitter taste.
We have world patents pending on a number of drinks based on the Cannabis Juice.

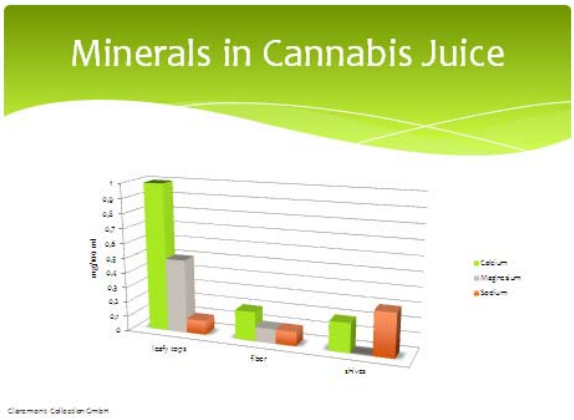
- Chemical analytics

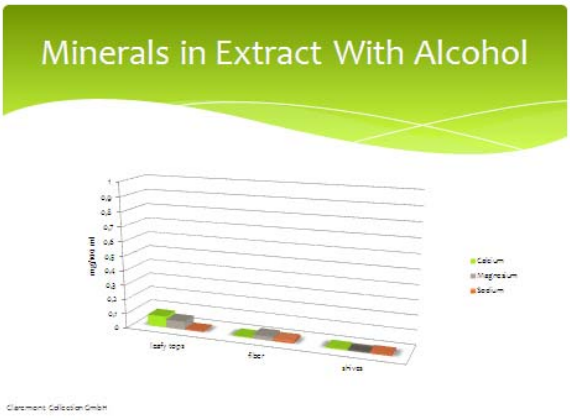
The drinks called Cannabis drinks on the market now, contain alcohol extracts or dried hemp leaves or boiling water extracts. Using the freshly pressed hemp juice is far superior from a nutritional and a health point of view. Scientific research at the German Bergische Universität Wuppertal shows that in hemp juice of the leafy tops of the 20 free amino acids that can occur in plants 19 are present, among them all 8 essential amino acids. All in all pressed under low pressure 180 mg / 100 ml juice was measured. Whereas in the alcohol extract of the leafy tops only 8 free amino acids were present, among them only 5 essential amino acids and all in all only 4 mg / 100 ml extract.



The compounded protein content of the hemp plant in the juice pressed under low pressure is 2.7 gr / 100 ml.

Compared to the mineral content of the juice from the leafy tops pressed under low pressure, the alcohol extract contains 5 times less minerals and trace elements.
As far as mineral content is concerned, it is highest in the Cannabis stalks.
Minerals and trace elements are almost double in the juice from the fibers and shives.
Again the alcohol extract from fibers and shives contained only negligible amounts of minerals.





The high amount of minerals and essential trace elements in the juice from the hemp stalks would make a future approval for human consumption by the European Commission desirable.

Comparing just the two complex ingredients in juice and in the alcoholic extract, our registered trademark GREEN SNAKE infers rightfully “The Essence of the Cannabis plant is in its juice”.

Second: What’s the juice for?

- For Humans

The juice freshly pressed from the leaves and the upper leafy part of the Cannabis plants approved in Europe may be used for human consumption.

The THC free Cannabis plant can unfold its many benefits for human health utilizing the juice. Whether in a form prepared for human consumption as drink, as dietary supplement, as taste enhancer in tomato juice or soups, or in a form applied to the human skin in cosmetics, the freshly pressed juice is the basis.
Research needs to be done to establish whether THC free Cannabis juice really has the surmised relaxing and calming effect, helping to sleep through the night.

The many medicinal uses of Cannabis do not depend on the THC molecule alone. Research needs be done on the basis of THC free Cannabis juice, offering the combination of over fifty cannabinoids in their natural combination.
Why produce expensive medicinal remedies for cancer patients, when you can just consume Cannabis drinks based on the fresh juice?

In medicine the juice could turn out far superior to the used alcoholic extracts, as the chemical analytics suggests.
Let one example be an indication: a patented process to apply THC free Cannabis alcoholic extract in ointment on itchy rashes of neurodermatitis showed a relief of the itch after 30 to 60 minutes. We applied as a test the juice itself on itchy rashes and got relief results after half a minute. The immediate itch relief from hemp juice also occurred after burning the skin with stinging nettle.

We experimented applying hemp juice on varicose veins and got smoothing results after a couple of applications. The applications needed to be continued for longer lasting results. Of course this can be just an indication of what to expect from fresh Cannabis juice.

- Utilizing the Cannabis Juice for other than Human Consumption

- For Biogas

An entirely different use of the juice is in biogas production. Using the pressed juice for energy production or for the production of lactic acid for the chemical industry still leaves the fibers intact for industrial processing. This holds especially for the juice derived from the hemp fibers and shives. Pressing them will free them from ingredients unwanted in further processing, but welcomed in the juice. While the juice from the leafy tops is used for human consumption, the juice from the hemp stalks is suitable for biogas.
Biogas producers have complained about the hemp fibers clogging up the stirring parts in the biogas plant. The press remains from the twin-screw extruder press are cut so small that they can be used in the biogas plant. It would be interesting to see, whether the methane gas-producing bacteria will render the short fine fibers of the hemp clean and ready to be used in the paper or textile industry.

Another part of the hemp plant can be used for biogas production: it is the taproot. It also can be pressed and its juice used as fertilizer on the field, whereas the press remains can go into biogas production. The taproot acts as storage of any leftover fertilizer, thereby preserving the drinking water reserves.

- For Animal Feed

Pressing juice from the Cannabis plant before feeding the press remains to cows will solve the problem that occurred lately: an accumulation of any small amount of THC in the cow's milk. Any THC present in the plant will be in the freshly pressed juice. In the juice the amount of THC can be controlled by diluting.
The press remains can be fermented in silos to enhance the protein content for animal feed. The bulk of animal feed from hemp far exceeds that of grass of the same acreage, a desirable ecological result.

Third: Patent Rights, Utility Model Protection, Licenses

- OPEN SOURCE

Inventing a procedure that can become very important in the long run and benefit many people brings with it the question of participation and distribution.

The invented process of pressing hemp juice for animal feed or for biogas or for the chemical industry or any other utilization not for human consumption may be used by anyone free of license charges as open source. However, registration with our company is mandatory for everyone pressing juice out of the Cannabis plant.

- OPEN LICENSE APPLICATION"

The process of pressing the juice out of the Cannabis plant and out of the various parts of the plant for human consumption is protected by International-Patent-Pending, as well as by Utility-Model-Protection. Cannabis juice - for consumer safety reasons - may only be produced from hemp plants approved by the European Commission. The patented Cannabis juice is not suitable for intoxication and cannot be used as a drug. Its THC levels may never exceed those approved by the European Commission.

To guarantee this the Cannabis Juice will bear a quality seal "GREEN SNAKE", a registered trademark for our company Claremont Collection GmbH. Our company will issue this seal only to registered licensees who agree to continuous controls and vouch to abide by the defined quality of the juice soled. Pressed Cannabis Juice or beverages or products made from it which bear this seal, abide by the specifications of the European Commission for consumer Protection and safety.

As we all know, there is the danger of abuse of the juice for human consumption. However we have decided to bring the patented process to universal use by opening up the license to anyone registered with our company and paying us a reasonable license fee. To ensure the right usage of Cannabis juice from Cannabis strands approved by the European Commission as protected by international patent and to ensure the safety of the consumer, everyone applying for license to produce Cannabis juice for human consumption has to agree in written contract to abide by the quality standards set by our company and the European Commission on consumer safety. As a symbol and a guarantee of quality, the licensed Cannabis juice and all products made out of it will bear a registered trademark symbol called GREEN SNAKE on each single package containing the licensed Cannabis juice. This label ensures the consumer of controlled quality and no THC.

- <u>Beverages and Products Made from Cannabis Juice</u>

  - EXCLUSIVE LICENSE APPLICATION”

Several beverages and products based on Cannabis juice are protected under international-patent-pending as well. Licenses to these beverages and products will be handled exclusively. We invite international companies to negotiate exclusive contracts for these derivatives of Cannabis juice.

Fourth: Hemp Juice produces additional value for the farmer

- "Partial Harvesting", an Additional Invention

We have found astonishing opportunities for added value to the farmer by streamlining the harvesting and production process at the farm. We have invented "partial harvesting" for hemp:
Juice is the big additional value, which can be realized at any time and is not in competition with the fibers nor with the seeds.
In order to space out the harvest of the leafy parts of the plant over time, so the juice pressed is always from freshly harvested plants and no interim storage and cooling is necessary, we have experimented with cutting off the leafy tops of the hemp plants at various stages of growth. The result was indeed extraordinary. The Cannabis plants just continued growing as stalk and some eventually developed new leafy tops. Our experiments have shown that this "partial harvesting" can start as early as six weeks after planting.
When later in the year the leafy tops with the ripe seeds are harvested, the stems can remain on the field and dry on the stalk. No further work is needed until harvest of the dry hemp in early spring.
Research is needed to determine whether the growth rate is even increased once the leafy tops are cut off.

“Partial harvesting” also allows for flexible harvesting times of the hemp fibers. This gives the farmer the opportunity to take current market prices into account for hemp fibers, hemp juice for biogas production, for animal feed or for industrial hemp and to choose a favorable harvesting time.

The juice can be obtained from any part of the hemp and at any maturation time of the Cannabis plant. However, the juice for human consumption is best from younger hemp.

“Partial harvesting” and the resulting flexible processing times increase the opportunities for cooperative sharing of the machinery as farmers do not need to harvest at the same time.

New machinery needs be invented for partial harvesting, for catching the evaporation liquid and of course for pressing the juice out of the Cannabis.

- <u>Pressing Hemp Juice adds value to the farmer</u>

Pressing hemp juice yields true added value. As indeed there are many added values for the farmer:

Instead of leaving the hemp for retting on the field, the hemp is processed immediately after harvesting. This increases the available acreage for additional crops. Hemp not used for oil

seed production can be harvested at a time, when it gives the desired quality of fiber demanded by industry. Another hemp crop may be planted right away again.

One new product I found was from the amazingly copious amounts of evaporation storing the freshly harvested hemp for 12 to 24 hours. Collecting the evaporation liquid and applying it to leather cleaned and polished the leather surfaces without making them sticky. The leather stayed smooth for a long time. This product adds value to the farmer.

We have experimented decorticating the fresh hemp with a patented machine normally used on dry hemp. The fibers came cleaner when decorticated freshly. Pressing the fibers yielded them dry for storage and also ready for further industrial processing.

Pressing the fibers and the shives the juice from the stems can be used in biogas facilities for energy production, or fermented to gain lactic acid for the chemical industry - adding value for the farmer again. While pressing the fibers will yield them suitably ready for industrial use.

Pressing this juice from the upper leafy parts of the hemp plant adds double value to the farmer, because the solid remains from pressing the leafy parts can be fermented in silos for animal feed.
We found that by adding water to the solid remains and by pressing them once more we still obtained fibrous material for human and animal consumption plus additional juice. This production step can be done on the farm also, adding value to the farmer.

The Cannabis plant is known to extract from the soil any unused fertilizer remaining from prior crops. Planting hemp therefore helps to keep safe the drinking water reserves in the ground. This is not only an ecologically desirable result. The juice pressed from the taproot of the plant can serve as fertilizer, while the solid remains of the roots can go into biogas production (together with liquid manure) adding value again. The pressed taproot remains will not clog up the stirring devices in the biogas facility, as hemp fibers will do.
What can be done at the farm add value to the farmer?

Fifth: Pressing Devices

Everyone here realizes that hemp is a strong, resisting plant. It seems that only with modern machinery the juice can be obtained. The juice must be filtered and free of any fiber remnants, because human teeth cannot chew hemp fibers.
We have used different devices to get to the juice: with a wine press, with a self-designed hydraulic press, with a barrel roller press, with a twin-screw extruder press, with a water-pressure press.

The least pressure was exerted with the water-pressure press. We froze the cut hemp to partially crack the cell walls before pressing and reached about the same weight of juice in kg to weight of press remnants.
All other presses rendered better results in terms of juice yield and dryness of the solid remains.
Juice from stems weighed typically 1.5 times more than the solid remains after pressing.
Juice from the upper leafy parts typically weighed 2.2 times more than the solid remains after pressing.

The twin-screw extruder was best suited for pressing the leafy tops and leaves. It cut the material and the fine fibers into short pieces. The length of the fibers depended on the circumference of the twin-screws. The resulting solid remains were best suited for animal feed or for usage as dietary fiber in human consumption.

All other presses left the full fiber length intact. We conducted no further research into the development of pressing devices. The industrial use of the resulting fiber will be the determining factor for the design of the pressing device.

Juice can be obtained from all of the pressing devices.