

# UF/IFAS Industrial Hemp

## Industrial Hemp Uses

by Mark Tancig, Zack Brym and Christine Kelly-Begazo



*Cannabis sativa* has been collected and grown since the earliest days of agriculture. Hemp has been recently distinguished as *Cannabis sativa* with THC <0.3%, which relates to primary uses for fiber and grain. Additional uses in modern cultivation include, biocomposite plastics, seed oil, biofuel production, and essential oil containing cannabinoids such as cannabidiol (CBD). The following sections describe the current uses of hemp characterized by their source – stem, seed, or inflorescence.

### Stem

Hemp fibers arise from the stems. The two types of fibers that can be used for processing are the hurd (inner pith of short, woody fibers) and the bast (outer phloem) fibers. Hurd fibers are used for fiberboard, compost, paper filler, absorbent, animal bedding, and as a chemical component of plastics, paints, and sealants. These higher quality bast fibers are from the inner bark and have been described as strong, lustrous and very durable. Bast is considered a softer fiber (from stems), like jute (*Corchorus* spp.) and flax (*Linum usitatissimum*), rather than a hard fiber (from leaves), such as sisal (*Agave sisalina*) or abaca (*Musa textiis*). Bast fibers can

be used for specialty paper, fabric, insulation, carpeting, cordage, and pulp.

Industrial hemp biomass, the combined harvest of stems and leaves, is also useful as a biofuel crop and has comparable yields as other lignocellulosic, non-food crops used to produce biofuels like sorghum and switchgrass.

### Seed

Hemp seeds are utilized as a grain or for their high-quality oil, and should not be confused with CBD oil. The use of hempseed for grain dates back thousands of years, and is still used in traditional Asian foods today. Hempseed is approximately 30% oil, 25% protein, and contains dietary fiber, vitamins, and minerals. The oil pressed from the grain (botanically an achene) is high in polyunsaturated fatty acids and contains two essential fatty acids, linoleic (an omega 6) and  $\alpha$ -linolenic (an omega 3) acid.

The high concentration of polyunsaturated acids contained in the oil can be used for various industrial applications, including varnishes and paint drying agents.

## Inflorescence



Photo Credit: Christine Kelly-Begazo

The inflorescence of the hemp plant, comprised of the flower stalk, along with leaves, can be processed via several extraction methods (CO<sub>2</sub>, ethanol, etc.) to produce various cannabinoids, including CBD and THC. CBD lacks the psychoactive properties of THC and has been shown to provide therapeutic and medicinal benefits.

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