

# The Study Situation and Sustainable Development of the Industrial Hemp

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**Abstract:** There are more than 10 institutions study industrial hemp in china. The studies are including germplasm, breeding, planting technology, biotechnology, remediation of oil or heavy metal contaminated soil. The main breeding method is cross breeding, but mutagenesis, and system selection being used too. The objectives of hemp breeding are high fiber or seeds yield, high fiber content, low THC and high CBD content, and so on. The regeneration system of hemp was studied too. The hypocotyls were used as explants for tissue culture. The induction rate of callus was 91.67%, the differentiation rate of bud was 76.67%, the rooting rate was 75%. Transformation system of hemp was been established. The cotyledons were used as explants for transgenic system. Cd could be strongly absorbed and accumulated by hemp. Low concentrations of Pb, Zn and Cd could increase the plant height and dry weight of hemp, and high concentrations of Pb, Zn and Cd restrain the growth of hemp. So, hemp is very good for phytoremediation of contaminated soil by heavy metals. The biomass which from contaminated soil can be used for charcoal, and then charcoal can be used to treatment of sewage. It is a greens environmental protection cycle. The germplasm, planting technology, biotechnology, degumming, processing are studied too, and have got many achievements. More than 500 patents which related to hemp were issued in China. They are including planting, processing, textile, food, oil, paper making, medicine, and so on. The most of them is belongs to Chinese companies and individuals, and some parents belong to foreign companies.

The hemp study, planting and production develop rapidly in recent years in China. There are about 50 thousands ha industrial hemp in China at 2017. There are more than 20 companies produce or will produce CBD. But there are some problems which impact the development of hemp industry too. One important problem is that hemp relate to marijuana. So, the THC and CBD content will be discussed. According to the study of the function, I suggest to relax restrictions of THC content of medicinal hemp. And other problems of seeds, machine, multipurpose, and policy will be discussed too. And some suggestions about sustainable development of the industrial hemp will be presented.

**Key words:** industrial hemp, dissemination, yield, utilization, research, phytoremediation, production, problem, suggestion