



*Hawai`i Industrial Hemp Research Project*  
*Act 305, 1999 Legislative Session*

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**10/12/03**

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This document is submitted pursuant to Act 305 (1999 Legislative Session).

**Final Status Report:**

On Sept 30, 2003, I terminated the activities of the Hawaii Industrial Research Hemp Project (Project) that had commenced in 1999.

Here I will summarize the experience, what was learned and why I stopped the work.

The goal of Act 305 was to see how hemp would do as a crop in Hawaii. There were things I knew as a plant breeder which were arcane to the well-intentioned, but naïve, proponents of this alternative. One of the things I knew was that naïveté is often the fount of discovery. Among the other things I knew and said in 1999, was that hemp, or “industrial hemp,” as some prefer these days, was a temperate climate crop; that its life-cycle was photoperiod driven which would cause it to flower quickly in the short days of tropical latitudes; that there were no recognized varieties of hemp suited to these latitudes; and that my biggest obstacles would not be agronomic.

In 1999, there was optimism: Canada had opened its agriculture to hemp, so had England and Germany. The movement was international and the millennial optimism was contagious. It was also good marketing strategy for any company that could incorporate a dab of hemp in their product.

Several years earlier, I’d undertaken a detailed exploration of hemp’s history, coming at the story as a plant breeder recently escaped from breeding corn in the corporate sector. Come 1999, the list of qualified, credentialed, interested, involved and available scientists to assume responsibility for so hair-brained an idea as hemp in Hawaii was short.

I arrived in June that year to make preparations. December 14 was declared "Industrial Hemp Day" by the Governor; we held a ceremonial planting on the quarter acre inside the 10ft cyclone fence required by the Drug Enforcement Administration (DEA).

By the end of the first year, I had shown what I meant about photoperiod. The available varieties of European germplasm obtained through a Canadian company were demonstrated to flower after a month and to finish their life cycle in a little over two months, rarely reaching more than three feet in height. It was an expected result, but in the meantime I was able to work out the agronomic requirements of the crop on the principal agricultural soil of Hawaii. I was also introduced to the major "hazard to production:" birds.

If one looks at the crops that have become successes in Hawaii, one notices that 1) they tend not to be seed propagated, and 2) they have long life cycles; to wit: sugarcane and pineapple. The exception is the significant use of land in Hawaii by the commercial seed industry, predominantly corn, as winter nursery for off-season production and breeding. It was my expectation at the inception that hemp grown in Hawaii was more likely to occur in this latter category than as a crop being used in the State. The argument I put forward was that the obstruction to hemp is Federal. For hemp to be grown anywhere in the U.S., there need be changes to Federal law. In the event such changes came to pass, the hemp crop would establish itself in its traditional areas, north of 35°. At such time, the commercial seed industry would undertake hemp breeding as with corn, and, as with corn, could potentially use their facilities in Hawaii. In any case, the starting point—and the Project was the starting point-- called for the introduction of Asian germplasm.

There is another critical fact of which I was probably more cognizant than others: the germplasm that had once been the basis of a thriving American hemp industry, a type of hemp known to the world as "Kentucky Hemp," has been lost to us. As hemp declined as a crop in the last half of the last century, there was a failure to preserve the germplasm, the seed as repository of genetic wealth. Kentucky Hemp had its origin in seed sent to the U.S. by missionaries in China after 1850. Breeding, culminating in the work of Dr. Lyster Dewey at the USDA, brought forth superior varieties until the work ended in 1933 with the New Deal reorganization of the USDA. The hemp that was best adapted to American growing environments had its origin in China.

So, in the second year of the Project, I dispatched a plant explorer/collector to China to collect a broad sample of hemp landraces. And I undertook a trip to Japan for the same purpose.

I had initiated performance trials with the growing collection of hemp germplasm, now including European and Chinese accessions, when the Project was attacked and all the seed was stolen. Certainly that event represents the turning point in the story. Trying to recover, I sent my plant explorer back to China to re-establish the collection. And I

entered into a protracted negotiation with the DEA. In the meantime, the material in the field was harvested and a crude estimate of performance potential was obtained. Among the accessions were races that managed to produce over 8 tons dry matter in approximately 4 months growth. In addition, I identified individual plants with short-day adaptation, which means they did not shift so quickly to their reproductive phase at Hawaiian latitudes and were able to continue growing, adding to their vegetative mass. One particularly interesting plant grew to the size of a small tree in 9 months and became the mother to a population of which the male component was a broad selection of European and Chinese hems. Obtaining this genetic mix was a critically important milestone.

I was, during this time, operating in a legal limbo because the DEA-225 Controlled Substances license applied for in April, 2002, was not issued while I worked emplacing the DEA's new security requirements. Changes were completed in October last year, but DEA agents were unable to arrange inspection until December. The security upgrades passed inspection on December 12, 2002. Meanwhile, I grew the new population of seed and obtained an intermating, though ill at ease about the legal limbo. While I waited for the DEA 225 Controlled Substances license, a prerequisite to the actual import permit needed to bring in my "controlled substance," the new collection of Chinese seed sat in China under less than favorable storage conditions. When the license finally did arrive in April, 2003, it was set to expire one month later.

By the end of 2002 I had grown the intermated population and showed in it plants that grew 8 feet in 3 months' time. When I cut them down, they were still vegetative and growing.

As my new collection of Asian hemp was dying in a warehouse in China, a new administration in Washington was attempting to ban all hemp food products from the United States. I resolved to wait for my license before proceeding. I reapplied in May, 2003, in the one-month window the new license held. I would not plant again until I was in good standing. I followed my field to ensure that none of this "controlled substance" would emerge from fallen seed. When September of this year came with still no license, I had to abandon the seed in China. It was increasingly obvious that I was involved in a war of attrition with the Federal government that saw hemp as a camel's nose under the tent of its War on Drugs. They could outlast me with administrative delays. It was not a battle I was likely to win. Nor did it appear likely that hemp would soon become a crop available to American farmers. One need only consider the numbers: The CBO estimates the sale of American agricultural exports at \$77 billion. The cost of the Drug War is not less than \$33 billion: the Office of National Drug Control Policy (the Drug Czar's office, a "cabinet-level" position) alone has a \$19 billion budget. Nearly half of value of American ag exports is consumed by the Drug War, 25% by one office in the Executive Branch. Who has the power?

Under the burden of the DEA's administrative delays, the project ground to a halt. I decided I had accomplished all I could in this climate, and it was time to quit, and, in doing so, to cry "Foul!" at the DEA's shenanigans.

Many words have been spent on hemp's potential. Much of it is speculative. In this Project I was able to demonstrate that the genetic potential exists within the world's hemp germplasm to create a variety of hemp capable of growing in a few months in a tropical environment a forest of 10 foot plants to provide fiber to any of a long list of industries. I had the plants; I showed it could be done. Perhaps, in some more reasonable future, it may be done again. On September 30, 2003 this hemp germplasm, like Kentucky Hemp before it, was lost to humanity.

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cc: Governor Linda Lingle  
Senate President Robert Bunda  
House Speaker Calvin K. Y. Say