
A BILL FOR AN ACT

RELATING TO AGRICULTURE.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

1 SECTION 1. Kalo, the Hawaiian word for taro (*Colocasia*
2 *esculenta* (L.) Schott), is a culturally significant plant to the
3 kanaka maoli (Hawaii's indigenous peoples) and the State of
4 Hawaii. Kalo intrinsically embodies the interdependency of the
5 past, the present, and the future, the essence of procreation
6 and regeneration, as the foundation of any sustainable practice.
7 Kalo expresses the spiritual and physical well-being of not only
8 the kanaka maoli and their heritage, but also symbolizes the
9 environmental, social, and cultural values important to the
10 State. This relationship is represented in the use of the kalo
11 plant on the crown of King Kalakaua. The state seal, adopted in
12 1959, includes eight taro leaves below the shield, honoring the
13 connection between the health of the land and the health of the
14 state. Today, the logo of the office of Hawaiian affairs and
15 many commercial enterprises throughout the State use this symbol
16 to communicate ohana, integrity, and a connection to Hawaiian
17 culture. The State of Hawaii further recognized the cultural



1 and historic significance of taro by designating it as the
2 official state plant.

3 Over three hundred kalo varieties may have existed at the
4 time of the arrival of European explorers (Pukui and Elbert,
5 Hawaiian Dictionary, 1986). Today, there are eighty-five known
6 traditional varieties of taro remaining, including Bun-Long
7 (Chinese), the use of which in Hawaii dates back more than one
8 hundred fifty years. Of these varieties, sixty-nine are unique
9 to the Hawaiian islands due to the horticultural skills of
10 native Hawaiian farmers (according to Bulletin 84: Taro
11 Varieties in Hawaii, 1939). Some are extremely rare. The State
12 is also a repository for many taro varieties from around the
13 world. Leaf blight-resistant cultivars were developed from this
14 resource using conventional hand-pollination methods to restore
15 taro crops in Samoa in the 1990s. Protecting and maintaining
16 the genetic identity of these varieties is critically important
17 to the recovery of old taro varieties in Hawaii and the Pacific.

18 Kalo is an important food crop in Hawaii and a complex
19 carbohydrate whose hypo-allergenic properties are life-saving
20 for those with digestive disorders and allergies, including
21 young children and the elderly. The health implications of non-



1 taro genes in genetically engineered kalo have never been
2 tested, nor have they been approved for human consumption.

3 Historically, there were thousands of acres under taro
4 cultivation in Hawaii. Today, however, there remain less than
5 five hundred acres of taro in production. In 2007, the most
6 recent year for the National Agriculture Statistic Service,
7 Hawaii Field Office market values, four million pounds were
8 produced on three hundred eighty acres of commercial taro land
9 (ten thousand five hundred twenty-six pounds per acre) at a
10 value of \$2,360,000, amounting to an estimated per acre value of
11 \$6,210, excluding luau leaf. Raw taro and value-added taro
12 products represent a multi-million dollar crop in Hawaii with
13 great potential for further growth as the State moves toward
14 food security and self-sufficiency. Control of the single worst
15 taro pest, the apple snail (*Pomacea canaliculata*), will increase
16 taro production on existing acreage by as much as twenty-five
17 per cent (Levin 2006). Cold water and adjusting growing regimes
18 will further reduce taro disease. Neither of these issues
19 requires a genetically engineered taro solution. Most locally-
20 grown taro is consumed within the state, indicating a highly
21 specialized market. Millers and consumers have specifically and



1 consistently rejected the use of genetically engineered taro or
2 poi made from it.

3 The 2008 legislature established the two-year taro security
4 and purity task force under Act 211, Session Laws of Hawaii
5 2008, to address non-genetically engineered organism
6 alternatives to taro farmer issues, including land and water
7 concerns, threats from pests, diseases, and taro imports,
8 educational opportunities, and economic issues. In the same
9 year, the counties of Hawaii, Maui, and Kauai supported a
10 moratorium on genetically-modified taro. In November of 2008,
11 the county of Hawaii passed Bill 361 banning the testing,
12 propagating, cultivating, raising, planting, growing,
13 introduction, or release of genetically modified taro on that
14 island.

15 The purpose of this Act is to further protect:

- 16 (1) The cultural integrity of kalo as part of the heritage
17 of the Hawaiian people and the State;
- 18 (2) The genetic biodiversity and integrity of all
19 traditional taro varieties in the state as part of the
20 sacred trust between the State and the indigenous
21 peoples of Hawaii; and



1 (3) Hawaii taro farmers' raw taro, poi, luau, and value-
2 added markets,
3 by establishing a ban on developing, testing, propagating,
4 releasing, importing, planting, and growing genetically
5 engineered taro in the State of Hawaii. This Act does not
6 prevent the University of Hawaii from conducting field testing
7 and commercial propagation of successful new varieties outside
8 of the state, excluding any named or unnamed taro whose lineage
9 has been determined to be Hawaiian.

10 SECTION 2. The Hawaii Revised Statutes is amended by
11 adding a new chapter to be appropriately designated and to read
12 as follows:

13 **"CHAPTER**

14 **GENETICALLY ENGINEERED TARO**

15 § -1 **Definitions.** As used in this chapter:

16 "Genetically engineered" means alterations to a life form
17 or its living progeny at the nucleic acid level, using the
18 techniques collectively referred to as recombinant DNA
19 technology.

20 "Hawaiian taro" means the following varieties of taro:
21 aweu, mana ula, mana opelu, mana weo, mana ulaula, mana lauloa,
22 mana keokeo, mana kukuluhema, piko lehua-apei, piko ulaula, piko



1 kea, piko keokeo, piko uaua, piko uliuli, piko eleele, elepaio,
2 uahiapele, manapiko, kai uliuli, kai ala, kai kea, apuwai, apu,
3 piialii, paakai, moana, lauloa eleele-omao, lauloa eleele-ula,
4 lauloa palakea-eeleele, lauloa palakea-ula, lauloa palakea-
5 papamu, lauloa palakea-keokeo, lauloa keokeo, eleele makoko,
6 eleele naioea, manini-owali, kumu-eeleele, nawao, ulaula kumu,
7 ulaula poni, ulaula moano, oopukai, manini uliuli, manini kea,
8 papakolea-koae, ula, nihopuu, manini-opelu, hinupuaa, ohe, lehua
9 maoli, lehua keokeo, lehua eleele, lehua palaii, apowale,
10 wehiwa, papapueo, kuoho, leo, maea, haokea, kalalau, hapuu,
11 laaloa, lauloa uliuli, lihilihimolina, mana eleele, mana okoa,
12 moi, oene, pikoele, pololu, Maui lehua, red moi, and any named
13 or unnamed taro whose lineage has been determined to be
14 Hawaiian.

15 "Recombinant DNA technology" means the transfer of genes,
16 regulatory sequences, or nucleic acid between hosts by the use
17 of vectors or laboratory manipulations and includes the
18 insertion, excision, duplication, inactivation, or relocation of
19 specific genes, regulatory sequences, or sections of nucleic
20 acid. This term does not apply to a material or an organism
21 developed exclusively through traditional methods of breeding,
22 hybridization, or nondirected mutagenesis.



1 "Release" means a discharge, emission, or liberation of any
2 genetically engineered organisms, or the product of a
3 genetically engineered organism, into the open environment.

4 § -2 **Genetically engineered taro; prohibited.** No
5 genetically engineered taro shall be developed, tested,
6 propagated, released, imported, planted, or grown in the State
7 of Hawaii."

8 SECTION 3. This Act shall not serve as a referendum on the
9 merits of biotechnology nor be applicable to any other crop.
10 Nothing in this Act shall be construed to prohibit the use of
11 controlled hand-pollination taro breeding methods (taro-to-taro)
12 to improve taro as a crop.

13 SECTION 4. This Act shall take effect on July 1, 2050.



S.B. NO. 709
S.D. 2
H.D. 1

Report Title:

Genetically Engineered Organisms; Taro

Description:

Prohibits the development, testing, propagation, release, importation, planting, or growing of genetically engineered taro in the State of Hawaii. Effective 7/1/50. (SB709 HD1)

SB709 HD1 HMS 2009-3196

