7. Use of Hawaii as a site for winter generations of maize.

Our second experience in growing mainland maize in Hawaii has shown that the 50th state can be successfully utilized for the outdoor greenhouse function. It has many advantages over traditional areas: (1) Losses of grain to birds does not occur, because of faunal discontinuities with the mainland. (2) Leaf blight and the necessity of frequent prophylactic sprayings are obviated in the warm, dry, leeward locations. (3) Insect problems are minimal even though earworm and leafhopper control should probably be practiced. (4) Proof of the temperance of the Hawaiian climate is best illustrated by the fact that there is no Hawaiian word for "weather." All-time record lows are above 50° to leeward. Extreme heat is absent as well as oppressive humidity and heavy dews. (5) Hawaii is out of the path of typhoons, and while winter Konas do occur, they are mild by comparison with mainland summer storms or the winter storms of other locations. (6) The best corn-growing season in Hawaii is actually the summer, making Hawaii a true year-round growing area. Simple conversion projects, e.g., Opaque-2 or Rf-MS could be "cranked out" in situ, and then brought home, completed. The much greater speed made in Hawaii in winter generations make possible more than 3 generations per year. (7) While volcanic soils do tie up phosphates, they are immeasurably better than coral-derived soils in regard to pH, tilth, water and ion holding capacity. It is not unusual for natives to grow small plantings of table corn with no fertilizer or irrigation or insect sprays. (8) Hawaii is south of the Tropic of Cancer, and has longer winter days with stronger insolation. (9) A much less obvious advantage is that those long, soul-testing periods of unremittingly cold, non-growing weather cannot and do not, occur in Hawaii. Salaried people will be able to conduct their work on an orderly, predictable schedule with shorter, more productive stays on site. Embarrassments will be avoidable in being able to accurately count on harvesting times. (10) Hawaii has truly spectacular scenery, unbelievably clean, blue waters and pristine beaches and an extravagance of tropic isle weather for the enjoyment of fishing, sailboating, diving, and relaxation.

It is expected that saving of time and expenses by salaried people will offset the greater travel distance, even in programs that may not be left in Hawaii the year around. Certainty of avoiding losses from freezes and birds will likewise offset travel costs. All farming costs in terms of equipment, fuel, fertilizer, labor and irrigation water are higher, but it is expected that the saving of most of the spraying expense and a large part of the fertilizer application will offset.

A less obvious disadvantage is the lack of going operations to plug into. Proper exploitation of Hawaii will be even more a matter of transplanting mainland personnel, equipment and methods to the islands. Equipment, parts, and supplies for Hawaiian operations are obtained from California on a day-to-day basis, and are thus to a large degree, extensions of the California Agricultural Establishment. It is believed that the closed insularity of tiny Hawaii could make competition among maize people on site prohibitively expensive in terms of driving up prices on highly limited land opportunities. It is believed that Hawaii is now

obviously economic, but that its potential can best be unlocked by one large, unified, completely mechanized effort among maize people. Since the entire winter maize enterprise lies well within the scope of a modern one-man management and equipment corn growing unit, and since we have already established the roots of such an organism, we are seeking to make our own operation economic by inviting outside interest.

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1. An effect of the o_2 gene in maize.

Preliminary experiments with opaque-2 material showed a lower test weight and a very high susceptibility in a cold test. The results of the tests with two selfed flint/opaque-2 crosses are given in the table.

	Phenotype	Test wt.	Average germination: 10 days at 10°C. 4 days at 27°C.	Average germination: 7 days at 27°C.
CR37/o_2 ⊗	flint	67	84.0	100.0
CR37/o_2 ⊗	opaque	57	20.0	77.5
CR39/o_2 ⊗	flint	66	83.0	99.5
CR39/o_2 ⊗	opaque	59	25.0	95.5

Eventually selection for high specific weight through sucrose or sodium thiosulfate solutions can be useful as it has been observed in other preliminary tests whose results are not shown.

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