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CHINESE CABBAGE VARIETY TRIAL:  
BOUQUET, KWANG MOON, MEI QING CHOI,  
TIP TOP, AND TROPICAL PRIDE VARIETIES

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#### ABSTRACT

Chinese cabbage is a popular vegetable in Samoa. In a continuing search for improved varieties adapted to a hot, humid environment, 5 commercial varieties were examined: Bouquet, Kwang Moon, Mei Qing Choi, Tip Top, and Tropical Pride. Plots of 12 plants in a double row, 30 cm between plants and 45 cm between rows, were planted for each variety in a randomized complete block with 3 replicates. The cabbages were mulched with grass clipping, fertilized, and harvested 45 days after transplanting. Survival rate and harvest weight were similar for all but the Bouquet variety, which was considerably smaller than the others. Except for Bouquet, the above varieties join Early Top, Joi Choi, Kurihara, and Saladeer as recommended Chinese cabbage varieties for Samoa.

Chinese cabbage is a popular vegetable crop in American Samoa. As part of an ongoing study, five commercially available varieties were screened for heat tolerance.

A previous study examined five hybrid Chinese cabbage varieties during the austral spring (Sagaga and Vargo, 1990). The present study was conducted during the austral winter. This is usually the best season for growing most vegetables because of its cooler temperatures and reduced rainfall. One variety from the previous study (i.e., Tropical Pride) was used for comparison against four previously untested varieties from New Zealand.

#### MATERIALS AND METHODS

Four Chinese cabbage varieties--Bouquet F1, Mei Qing Choi F1, Kwang Moon, and Tip Top--from Watkins Seeds, P.O. Box 468, New Plymouth, New Zealand, were compared with Tropical Pride variety from Sakata Seed Corp., 1-7, Nagata Higashi 3-chrome, Minami-ku, Yokohama, Japan 232.

Seeds were placed in water-saturated 1 in x 1 in rootcubes from Smithers-Oasis, 919 Marvin Avenue, P.O. Box 118, Kent, OH 44240, on 03-JUN-91. The 162-plant trays were fertilized 05-JUN and 10-JUN with 1 liter of 10-52-8 Plant Starter Fertilizer (3.75 g/L) from Warsaw Chemical Co. Inc., Warsaw, IN 46580. Because Tip Top seedlings appeared yellower than the others, a micronutrient deficiency was suspected. So all seedlings were fertilized 13-JUN with 1 liter of Peters Professional Water Soluble Fertilizer

(20-10-20; 1.25 g/L) from Peters Fertilizer Products, Fogelsville, PA 18051. Tip Top seedlings were noticeably greener within 4 days.

Meanwhile, a 6.5 m x 7.8 m level area of Pavaiai stony clay loam was sprayed 10-JUN with Goal 1.6E herbicide (0.5 lb a.i./acre) from Rohm and Haas, Philadelphia, PA (Munroe and Nishimoto, 1988) This killed off most weeds, but annual grasses began sprouting almost immediately. So Ortho Paraquat CL (0.4 lb a.i./acre) from Chevron Chemical Company, San Francisco, CA 94119, was sprayed on 17-JUN. This killed off all but a few patches of grass.

Seedlings were transplanted 25-JUN in their rootcubes in a Randomized Complete Block Design with 3 replicates. Each plot comprised 12 plants in 2 rows, 30 cm between plants and 45 cm between rows (Opena and Lo, 1980). Each plant received 200 ml of 10-30-20 fertilizer (6.7 g/L) from Peters Fertilizer Products at transplant and 100 ml on 10-JUL. By 17-JUL the seedlings were tall enough to allow a grass mulch to be spread among the plants to control annual weeds. The plants were harvested and weighed on 09-AUG, 66 days after seeding and 45 days after transplanting. Rainfall and temperature measurements were made on site using a Tru-Check rain gauge (150-mm capacity, read each weekday at 8 am) and a Belfort Instrument continuously recording temperature apparatus

#### RESULTS AND DISCUSSION

Some Chinese cabbage varieties, if left in the field for 60 days or so, may form heads. But research elsewhere shows the incidence of heading may be less than 30% with increased risk from

pests, diseases, and bolting (Shinohara, 1981). For these reasons Chinese cabbage in Samoa is usually harvested when the plant looks mature but lacks a head, i.e., before 50 days.

A few plants were attacked by the giant African snail, Achatina fulica, soon after transplanting and had to be replaced. Snails make their forays during the night. They prefer a habitat of tall, thick vegetation in which to rest during the day. Once such vegetation was removed from around the plots and the exposed snails killed, the Chinese cabbage plants were free of this pest. Snails did not return to inhabit the grass mulch. Normally, too, cabbage in Samoa is subject to attack by caterpillars, particularly those of the diamondback moth, Plutella xylostella. Caterpillar infestation was extremely light during this study, so no control measures, beyond simply picking them from the plants, were taken.

The mean weights and standard deviations of each replicate are given in Table 1. Because the standard deviations are unequal nor the data amendable to a transformation to make them equal, an ANOVA was not performed. Plant stand varied between 7 to 12 plants per plot with no significant differences among varieties. Rainfall and temperature data appear in Fig. 1.

In conclusion, all varieties except Bouquet performed equally well. Bouquet, with its low mean yield, should not be recommended to growers in Samoa. Because Tropical Pride variety was grown in this study and in a previous study, and there were no differences between Tropical Pride and the other varieties in either study (again, except for Bouquet in this study), the following nine Chi-

nese cabbage varieties may be recommended for Samoa: Early Top, Joi Choi, Kurihara, Kwang Moon, Mei Qing Choi, Saladeer, Tip Top, and Tropical Pride.

#### ACKNOWLEDGEMENT

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Table 1. Means and standard deviations ( $\bar{x} \pm s$ ) of yields for 5 Chinese cabbage varieties.

	Mei Qing C.	Kwang Moon	Tip Top	Bouquet	T. Pride
Block 1	304 $\pm$ 77	341 $\pm$ 170	280 $\pm$ 169	184 $\pm$ 66	266 $\pm$ 76
Block 2	306 $\pm$ 69	214 $\pm$ 91	207 $\pm$ 169	208 $\pm$ 73	188 $\pm$ 90
Block 3	167 $\pm$ 66	241 $\pm$ 117	381 $\pm$ 161	128 $\pm$ 81	206 $\pm$ 149
Average:	259	265	290	173	220

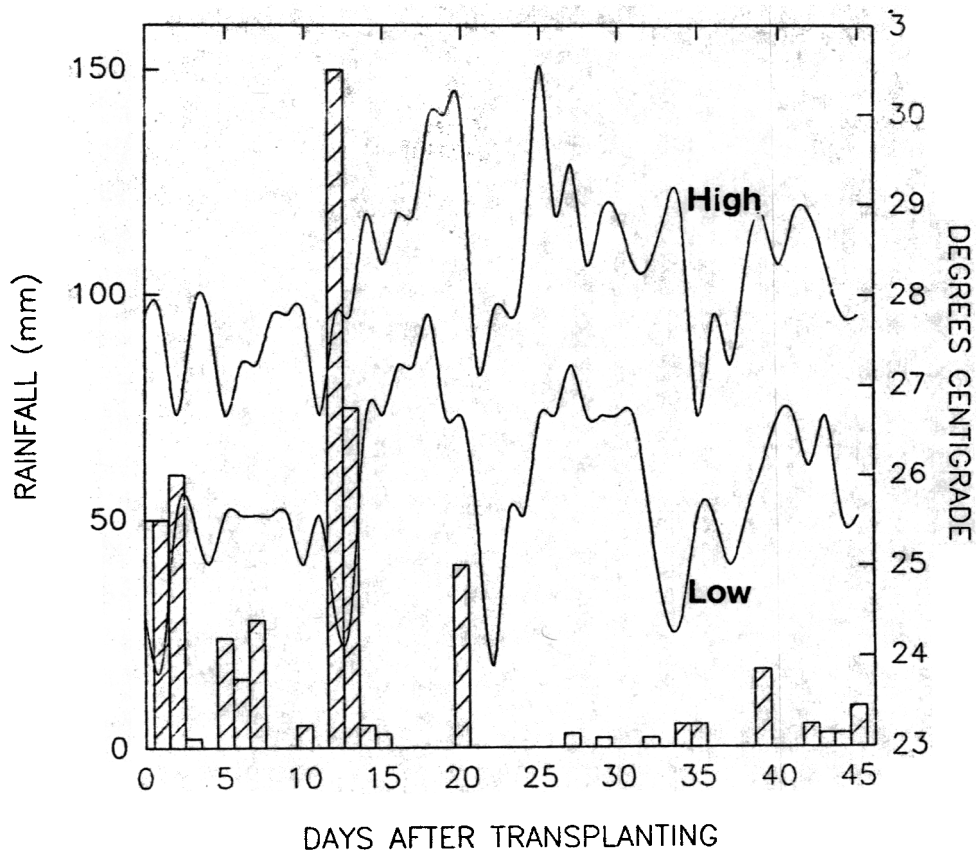


Fig. 1 Rainfall and temperature record between 25-JUN-91 to 09-AUG-91 at the Land Grant Experiment Station, Malaeimi, American Samoa. Total rainfall exceeds 511 mm.