

# Head Cabbage Variety Trial Poamoho Spring 2005

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## **Introduction**

A head cabbage variety observational (non-replicated) trial was conducted at the UH Poamoho Experiment Station in the Spring 2005. The station is located in Central Oahu at about 870 ft elevation. The soil in the station is a Wahiawa silt clay, with a mineralogical composition of kaolinitic clay and iron oxides and an organic carbon content of about 2%. Typical experimental plots in the station have a pH of about 6, EC of 0.20 mmhos, and have nutrient levels of P= 368, K= 370, Ca= 1670, and Mg= 188 ppm in the soil solution. Because this crop was planted in late March, and harvested during June and July, the trial evaluated those varieties that can best perform during the warmer months of the year.

## Materials and Methods

Thirteen head cabbage varieties were provided by Jason Cooksey from Western Pacific Seed for evaluation in Central Oahu and in other cabbage production areas of the state. The crop was direct seeded on March 30, 2005 with a spacing of 18 inches within the row, and 2 feet between rows. Each plot consisted of one 40-ft long row. The crop was drip irrigated as needed, and fertilizer and pest management practices were followed according to standard practices for commercial head cabbage production.

The crop was first harvested on June 7<sup>th</sup>, and follow-up weekly harvests were conducted until July 12<sup>th</sup>. At each harvest date up to 5 heads were collected from those varieties that were deemed to be ready for harvest (based on head size and density). Beginning on July 14, representative heads of each variety were brought to the laboratory for a closer determination of head maturity based on head size dimensions, weight, volume, and density.

## Results

Marketable yields (on an area and per unit basis), and head size of all the varieties tested is listed in Table 1. The mean head weight of each variety during the different harvest dates is presented in Table 2. The mean weekly weights provide an indication of the early and late maturing varieties, when compared to 'Scorpio', a standard head cabbage variety in Hawaii. The laboratory evaluations of head maturity (to determine proper time to harvest) is presented in Table 3, with the data from all harvest dates pooled together. A head density value above 0.65 was deemed to indicate maturity for the purposes of this evaluation (i.e. heads with a density value lower than 0.65 were picked too early, or the variety was not adapted to the warm growing conditions). The week by week determination of head maturity is presented in Table 4, which again gives an indication of the early- and late-maturing varieties.

**The Top Early-maturing varieties** (harvest at 75 days after direct-seeding) based on head maturity and marketable yields were (see figures on pg. 5):

1. TSX-888
2. Asia Express
3. Amukos
4. Wonder Ball

**The top varieties with a maturity similar to the standard Scorpio variety** (harvest at about 85 days after direct seeding) were (see Figs. on pg. 6):

1. Scorpio
2. CT-42
3. Garak Ball
4. TSX-888
5. CT-49.

**The top late-maturing varieties** (harvest at about 100 days after direct-seeding) were (see Figs. on pg. 7):

1. CT-50
2. Yoshin Ball
3. CT-43

## Conclusions.

Overall all varieties showed good to excellent horticultural characteristics. Because the market is now asking for smaller-sized heads, growers may choose those early varieties with smaller heads but adequate maturity index. Growers will also likely show preference for early-maturing varieties to minimize the buildup of caterpillar pest populations.

**Table 1. Head weight (lbs) and marketable yield of several head cabbage varieties grown at the UH Poamoho Experiment Station, Oahu, in the Spring 2005.**

Cultivar	Total weight per head (lb)	Mkt weight per head (lb)	Mkt weight lbs/Acre	Mkt weightt (lbs/100 ft)	Plant Height (inches)	Head Diameter (inches)
CT-50	7.5 A	6.5 A	108,842.2	496.6	14.1	8.1 A
Yoshin Ball	6.4 B	5.6 B	92,929.6	424.0	14.8	7.5 ABC
Scorpio	6.2 BC	5.3 BC	90,065.3	410.9	12.9	7.5 ABC
CT43	5.9 BC	4.4 D	85,928.0	392.0	15.0	7.6 AB
CT42	5.9 BC	4.9 CD	84,973.3	387.7	14.2	7.5 ABC
Garak Ball	5.7 C	4.7 D	82,745.5	377.5	13.7	7.2 ABCD
TSX-888	4.7 D	3.9 E	67,469.4	307.8	12.5	6.7 BCDE
CT-49	4.5 D	3.7 E	64,923.4	296.2	13.1	6.6 CDE
TSX-4455	4.3 D	3.6 E	62,059.1	283.1	12.7	6.5 CDE
Asia Express	4.2 D	3.7 E	60,467.9	275.9	10.5	5.9 E
Wonder Ball	4.1 D	3.4 E	58,876.6	268.6	11.7	6.7 BCDE
TSX-9651	4.0 D	3.3 E	58,240.1	265.7	13.3	6.5 DE
Amukos	3.2 D	2.8 F	45,828.3	209.1	10.2	6.3 DE

**Note: Marketable yields per acre and per 100-ft row were calculated based on 18 inch plant spacing within the row, and 2 ft spacing between rows for a plant population of 14,466 plants per acre, and 66 plants per 100 ft row.**

**Note: For statistical analysis comparison, numbers followed by the same letter within a column are considered to be statistically similar according to Duncan's new multiple range test. Because this was an observational study, the data should be treated with caution. Additional replicated trials need to be conducted on a location-by location basis to evaluate individual varietal performance in the different growing regions in the state.**

**Table 2. Cultivar Head Weight by Date (pounds per head).**

Cultivar	June-6 68 DAP	June-14 76 DAP	June 21 83 DAP	June 28 90 DAP	July 12 104 DAP
TSX-888	3.0	4.2	3.9		
Asia Express	3.7	3.9	3.4		
Wonder Ball	3.3	3.6	3.2		
TSX-9651	3.9	3.3	3.3		
Amukos	2.8	3.1	2.4		
CT-49		3.5	3.9	3.8	
TSX-4455		3.9	4.1	2.9	
Scorpio			5.3	5.3	
CT43			4.4		
CT42			4.7	5.0	
Garak Ball			4.7		
CT-50				6.2	6.8
Yoshin Ball				7.0	4.8

Table 3. Postharvest maturity evaluation (all harvest dates pooled together). A head density value of 0.65 or greater is considered an index of maturity in head cabbage.

Cultivar	Head Weight (lb)	Head Diameter (inches) (gr/cc)	Head Density
CT-50	5.5 AB	7.6 A	0.67 ABCD
Yoshin Ball	6.4 A	7.9 A	0.68 ABC
Scorpio	5.4 BC	7.4 AB	0.7 ABC
CT43	4.0 DEF	7.0 BC	0.62 DEF
CT42	4.4 CDE	7.0 BCD	0.69 ABC
Garak Ball	4.7 BCD	7.0 BC	0.72 A
TSX-888	3.6 DEFG	6.5 CDE	0.68 ABCD
CT-49	3.5 EFG	6.5 CDE	0.65 BCDE
TSX-4455	3.4 EFG	6.8 CDE	0.57 F
Asia Express	3.5 E	6.4 DE	0.7 ABC
Wonder Ball	3.1 GF	6.4 E	0.64 CED
TSX-9651	3.2 GF	6.6 CDE	0.59 EF
Amukos	2.8 G	5.9 F	0.71 AB

**Note:** For statistical analysis comparison, numbers followed by the same letter within a column are considered to be statistically similar according to Duncan's new multiple range test. Because this was an observational study, the data should be treated with caution. Additional replicated trials need to be conducted on a location-by location basis to evaluate individual varietal performance in the different growing regions in the state.

Table 4. Maturity Index by date (as determined by head density- an index value above 0.65 index indicates adequate maturity for harvest).

Cultivar	June-14 76 DAP	June 21 83 DAP	July 12 104 DAP	Mean diameter (inches)
CT-50			<b>0.67</b>	7.6
Yoshin Ball			<b>0.68</b>	7.9
Scorpio		<b>0.68</b>	<b>0.71</b>	7.4
CT43		0.60	0.63	7.0
CT42		<b>0.65</b>	<b>0.74</b>	7.0
Garak Ball		<b>0.72</b>		7.0
TSX-888	<b>0.68</b>	<b>0.68</b>		6.5
CT-49	0.60	<b>0.66</b>	<b>0.67</b>	6.5
TSX-4455	0.48	0.59	<b>0.63</b>	6.8
Asia Express	<b>0.72</b>	<b>0.68</b>		6.4
Wonder Ball	<b>0.63</b>	<b>0.65</b>		6.4
TSX-9651	0.58	0.60		6.6
Amukos	<b>0.74</b>	<b>0.66</b>		5.9



## Early Head Cabbage Varieties (75 DAP)



**TSX-888**



**Asia Express**



**Amukos**



**Wonder Ball**

## Cabbage Varieties similar maturity to Scorpio (85 DAP)



**Scorpio**



**CT-42**



**Garak Ball**



**CT-49**



## Later Maturity Head Cabbage Varieties (90 DAP)



**CT-50**



**Yoshin Ball**



**CT-43**

### Seed Source

Western Pacific Seed  
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