

**Report to the Oregon Processed Vegetable Commission
1992-1993**

1. Title: Cauliflower Variety Observation
2. Project Leaders: J. R. Baggett, Horticulture
J. R. Stang, Horticulture
3. Project Status: Terminating June 30, 1993
4. Project Funding: \$3,000
\$1,944 supplementary technical support

Funds were used primarily for research farm expenses and labor for transplanting, breeding, and harvesting.

5. Objectives:

Evaluate head quality, maturity time, and total yield of eight promising cauliflower varieties over a range of planting times; screen additional cauliflower varieties to identify those having suitable characteristics for processing.

6. Report of Progress:

Two replicated (4x) plantings of eight promising varieties were established using transplants produced in seedbeds on the OSU Vegetable Research Farm in Corvallis. Planting 1 was seeded May 22 and transplanted June 26. Planting 2 was seeded June 18 and transplanted July 24. Also on these dates, additional varieties were seeded and transplanted in unreplicated observation plots. Spacing of transplants was 1.5 feet within rows and 3 feet between rows. About 450 lb/acre of 12-29-10 fertilizer was banded prior to transplanting. Planting 1 was sidedressed with an additional 175 lbs/acre of urea six weeks after transplanting. Planting 2 was sidedressed with 50 lbs/acre of calcium nitrate five weeks after transplanting, and with an additional 150 lbs/acre of urea seven weeks after transplanting. Overhead irrigation was applied about once per week throughout the growing season. The distribution of water across the plots was uneven due to high winds. Consequently, some plots experienced water stress, especially during July and August.

Roughly 15 to 20 heads were harvested from each plot. Harvesting occurred weekly, the heads being cut at a stage of maturity considered comparable to industry standards. Data collected from heads included weight and dimensions, internal and external color, riciness, curd depth, head solidity, and chunkiness of the head structure.

The most promising variety in the replicated trials was Snowman. Compared to Snowball Y Improved, Snowman had larger heads of better color with much less riciness (Tables 1 and 2). On the other hand, Snowman heads had slightly lower ratings for solidity and chunkiness. The superiority of Snowman head quality was particularly noticeable at the June 26 planting. However, some heads of Snowman developed a slightly purplish fuzz. The maturity of Snowman was somewhat more concentrated than Snowball Y Improved and occurred 7 to 14 days later (Tables 3 and 4).

The head quality of Crystal, Olympus, and Snowflower was poor at the June 26 transplanting, and of marginally superior quality to Snowball Y Improved at the July 24 transplanting. The heads of Aubade varied widely in size, quality, and in the time of maturity. The June 26 planting of Lateman produced heads of good color and low riciness, but they received low scores for solidity and chunkiness.

The only promising variety in the observation trials was HMX 8180 (Tables 5 and 6). Its heads were comparable in quality to Snowman; however, they matured about one week later (Tables 7 and 8).

7. Summary:

Two replicated plantings of cauliflower were made to study the suitability of promising cauliflower varieties for processing. Snowman produced larger heads of better color and less riciness than the standard variety Snowball Y Improved. However, the heads of Snowman were slightly lower in solidity and chunkiness. The superiority of Snowman to Snowball Y Improved was greatest for the early (June 26) transplanting.

8. Signatures:

Redacted for Privacy

Project Leaders:

Redacted for Privacy

Redacted for Privacy

Department Head:

Table 1. Cauliflower replicated trial, June 26 planting, head quality scores and yield, Corvallis, 1992.¹

Variety	Source ²	Ext. Color	Globe Shape	Solidity	Fuzzy	Ricey	Core			Curd		Density ³ (g/cc)	Lbs/Head	T/A ⁴	Notes
							Hollow	Color	Ht.	Depth (cm)	Chunkiness				
Snowflower	1	1.4	1.3	4.7	3.6	2.1	3.1	2.5	4.3	2.3	4.4	0.44	2.4	11.8	early heads have poor quality
Crystal	2	1.8	1.2	4.8	4.3	2.7	3.9	3.9	4.2	2.2	4.7	0.46	2.1	10.4	some external purple and internal green heads
Snowman	3	3.6	2.9	4	1.6	3.9	4.1	4.6	4	2.3	3.5	0.45	3.1	15.1	some purple fuzz but otherwise beautiful color
Olympus	1	1.9	1.6	4.4	3.5	2.7	3.8	3.8	3.9	2.2	4	0.43	2.7	13.3	some with leaves growing in curds
Snowball 123	3	1.6	1.2	4.6	3.6	1.9	3.3	3.3	4.3	2.6	4.5	0.46	2.3	11.1	some purple fuzz, nice looking at mid-harvest
Lateman	4	3.1	4.6	2.8	5	4.8	4.8	4.8	3.4	1.9	1.7	0.37	2.9	14.0	curds shatter
S88001	5	2.7	2.4	3.5	1.3	3.9	4.9	5	3.3	2.1	3.3	0.39	2.4	11.7	curds shatter, some internal green, sweet
Aubade	6	3.1	3.1	3.1	3.3	4	4.9	4.9	3.3	1.7	2.7	0.41	2.3	11.1	sweet, mild, nice looking heads, good internal color
Snowball Y Imp.	3	2.2	1.7	4.6	3.3	2.7	3.3	3	4.4	2.3	4.6	0.44	2.4	11.5	some heads with internal and external purple, early heads have leaves in curds
LSD at 5%		1.3	0.9	0.9	1.3	1.4	1.0	0.9	1.2	0.5	0.9	0.046	0.6	2.8	

¹Transplanted 18" apart in rows 36" apart. All scores based on 1-5 scale with 5 best. All values are average of four replications with harvest date scores combined and weighted by the number of heads harvested at each date.

²Sources: 1 = Asgrow, 2 = Peto, 3 = Harris-Moran, 4 = Elsoms, 5 = Royal Sluis, 6 = Nickerson Zwaan.

³Head density is a relative value calculated from head weight and the volume of a box created by measurements of width and depth of head. Five heads were measured at each harvest (or less if fewer were harvested).

⁴Tons/acre adjusted to 20 plants/plot.

Table 2. Cauliflower replicated trial, July 24 planting, head quality scores and yield, Corvallis, 1992.¹

Variety	Source ²	Ext. Color	Globe Shape	Solidity	Fuzzy	Ricey	Core			Curd		Density ³ (g/cc)	Lbs/Head	T/A ⁴	Notes
							Hollow	Color	Ht.	Depth (cm)	Chunkiness				
Snowflower	1	3.1	2.1	3.9	4.1	3	3.9	4.2	3.4	1.7	3.9	0.39	2.6	12.7	some external purple in early heads
Crystal	2	3.5	2.1	4.4	4.9	3.9	3.9	4.5	3.3	2.1	4.5	0.40	2.4	11.6	
Snowman	3	3.9	2.8	3.6	2.8	3.7	4.5	4.6	3.6	2.2	3.1	0.40	2.6	12.5	
Olympus	1	2.9	2.3	3.5	4.3	2.7	4.1	4.2	3.8	1.8	3.7	0.37	2.8	13.7	
Snowball 123	3	2.8	1.9	4	4.3	2.7	3.6	4	3.6	1.9	4.1	0.40	2.6	12.5	
Lateman	4	3.1	3.6	2.7	5	3.8	4.7	4.9	3.1	1.9	2.5	0.35	2.4	11.7	
Aubade	5	2.6	1.2	3	4.7	4.4	5	5	4.1	1.8	3.7	0.38	1.7	8.1	late heads with leaves within curds and internal green
Snowball Y Imp.	3	2.8	1.9	4.1	3.7	2.9	3.7	3.9	3.5	2	3.9	0.39	2.1	10.3	late heads had internal green
LSD at 5%		NS	0.8	0.5	0.5	0.7	0.9	NS	NS	NS	0.5	NS	0.5	2.3	

¹Transplanted 18" apart in rows 36" apart. All scores based on 1-5 scale with 5 best. All values are average of four replications with harvest date scores combined and weighted by the number of heads harvested at each date.

²Sources: 1 = Asgrow, 2 = Peto, 3 = Harris-Moran, 4 = Elsoms, 5 = Nickerson Zwaan.

³Head density is a relative value calculated from head weight and the volume of a box created by measurements of width and depth of head. Five heads were measured at each harvest (or less if fewer were harvested).

⁴Tons/acre adjusted to 20 plants/plot.

Table 3. Percent of total cauliflower heads harvested on harvest days, replicated varieties, June 26 planting, Corvallis, 1992.¹

Variety	Days from Transplanting											
	61	68	75	82	89	96	103	110	117	124	131	138
Snowflower			5	26	36	12	9	8	1	4		
Crystal			1	6	31	27	12	6	12	5		
Snowman				3	19	15	24	17	19	3		
Olympus			1	1	12	18	20	16	14	12	3	3
Snowball 123		3	10	24	34	18	9			1		1
Lateman						16	21	34	18	7	4	
S88001	10	15	11	9	32	9	9	1	3	1		
Aubade	22	15	23	12	9	6	4	1	1	5	2	
Snowball Y Imp.		4	8	9	32	22	9	9	4	1	1	1

¹Percentage based on total of four replications.

Table 4. Percent of total cauliflower heads harvested on harvest days, replicated varieties, July 24 planting, Corvallis, 1992.¹

Variety	Days from Transplanting								
	69	76	83	90	97	104	111	118	125
Snowflower				2	25	22	44	6	
Crystal				4	24	35	24	8	4
Snowman					2	8	44	40	6
Olympus					2	14	42	18	24
Snowball 123				3	31	42	21	3	
Lateman					10	59	32		
Aubade	56	21	13	4	2	2		2	
Snowball Y Imp.		2	2	18	8	29	27	9	6

¹Percentage based on total of four replications.

Table 5. Cauliflower head quality scores and yield, observation plots, June 26 planting, Corvallis, 1992.¹

Variety	Source ²	Ext. Color	Globe Shape	Solidity	Fuzzy	Ricey	Core			Curd		Density ³ (g/cc)	Lbs/Head	T/A ⁴	Notes
							Hollow	Color	Ht.	Depth (cm)	Chunkiness				
Mariposa	1	2.8	4.2	2.9	5.0	5.0	5	5	4.5	2.0	2.2	0.36	2.9	14.0	
HMX 8180	2	3.7	3.3	4.1	3.3	4.8	4.8	4.9	2.2	2.4	4.0	0.43	3.1	15.1	very good quality; resembles Snowman
Ravella	1	2.6	3.7	2.5	0.5	4.6	5	5	1.8	2.1	3.1	0.37	2.1	9.9	extremely fuzzy; early heads bitter
McKinley	1	3.8	4.6	2.8	1.7	4.8	5	5	3.5	2.2	2.0	0.40	4.2	20.3	good wrapper leaves; excellent internal color; curds shatter
HMX 8178	2	3.7	3.7	2.7	4.9	4.9	5	5	4.5	2.5	1.6	0.32	3.2	15.3	curds shatter
Cumberland	1	3.4	4.0	2.5	4.9	5	5	5	4.1	2.0	2.7	0.37	2.7	13.0	good flavor
PSX 518789	3	2.9	4.5	2.3	4.1	4.7	5	5	3.2	1.9	2.1	0.36	3.1	15.1	mild flavor
Tofar	4	2.5	4.1	2.3	3.3	3.8	5	5	3.3	1.7	1.5	0.33	3.6	17.4	
Starbrite Y	5	2.8	3.3	1.7	3.2	4.7	5	5	2	1.9	2.5	0.29	2.1	10.1	mild flavor; not a processing type
Rushmore	1	1.7	2.9	2.5	2.3	4.6	4.5	5	2.8	2.0	2.7	0.39	1.5	7.3	very small heads
Fargo	4	3.0	4.9	1.9	4.0	3.8	5	5	3.1	2.1	2.3	0.31	2.8	13.7	may be a good fresh market type; not a processing type
HMX 8179	2	2.5	3.3	1.6	4.6	3.7	5	5	5	1.1	1.2	0.31	2.2	10.6	shallow curds; low solidity but many branches provide weight
PSX 500485	3	2.2	4.2	3.0	5	4	5	5	4.4	2.1	2	0.38	2.9	13.8	very uniform looking heads

¹Transplanted 18" apart in rows 36" apart. All scores based on 1-5 scale with 5 best. All values are average of harvest date scores combined and weighted by the number of heads harvested at each date.

²Sources: 1 = Royal Sluis, 2 = Harris-Moran, 3 = Peto, 4 = Bejo, 5 = Abbott and Cobb.

³Head density is a relative value calculated from head weight and the volume of a box created by measurements of width and depth of head. Five heads were measured at each harvest (or less if fewer were harvested).

⁴Tons/acre adjusted to 20 plants/plot.

Table 6. Cauliflower head quality scores and yield, observation plots, July 24 planting, Corvallis, 1992.¹

Variety	Source ²	Ext. Color	Globe Shape	Solidity	Fuzzy	Ricey	Core			Curd		Density ³ (g/cc)	Lbs/Head	T/A ⁴	Notes
							Hollow	Color	Ht.	Depth (cm)	Chunkiness				
Mariposa	1	2.5	3.9	2.1	5	4.3	5	5	2.8	1.3	1	0.34	2.5	12.3	
HMX 8180	2	4	3.8	3.5	5	4.9	5	5	4.6	2.3	3.9	0.40	2.6	12.7	
Ravella	1	3.3	4.1	2.2	4.7	5	5	5	2.2	1.5	2.4	0.34	2.6	12.4	internal green
McKinley	1	3.5	2.8	2.6	2.9	2.2	5	5	2.6	1.9	2.3	0.36	3.7	15.4	
HMX 8178	2	3.6	2.8	1.2	2.7	4.5	5	5	2.8	0.8	0.7	0.30	2.7	13.0	
Cumberland	1	3.1	4.7	2.8	5	4.5	5	5	3.2	1.9	2.8	0.40	2.7	13.3	
PSX 518789	3	2.6	4.2	2.2	5	4.2	4.4	5	4.3	1.7	2.3	0.33	2.8	13.6	
Tofar	4	2.4	3.7	1.7	5	2.6	5	5	1.1	1.1	1	0.27	2.9	13.8	
Starbrite Y	5	3.5	3.9	1.1	5	3.8	5	5	2.5	1.2	1.2	0.30	2.8	13.5	
Rushmore	1	2.8	2.9	1.8	5	4.9	5	5	2	1.2	1.7	0.31	2.4	11.6	
Fargo	4	2.5	3	2.1	5	4.5	5	5	2.3	2.1	2.2	0.32	3.3	15.7	
HMX 8179	2	2.9	2.5	1.9	5	4.9	5	5	1.9	1.1	1.9	0.35	2.7	13.0	
PSX 500485	3	2	3	1.7	5	2.9	5	5	3.5	1.3	1.2	0.32	2.7	13.0	some internal green
Snowpak	3	2.7	1.3	1.7	4.3	4.3	5	5	2.3	1.9	1.7	0.39	2.5	12.3	
S88001	1	3.1	2.4	2.9	3.6	3.9	5	5	3.6	1.5	2.7	0.37	2.9	14.2	some internal green
Batsman	4	2.4	3.5	3.5	5	5	5	5	4.2	3.4	3.8	0.43	1.8	8.5	sweet and mild, may be good fresh market type

¹Transplanted 18" apart in rows 36" apart. All scores based on 1-5 scale with 5 best. All values are average of harvest date scores combined and weighted by the number of heads harvested at each date.

²Sources: 1 = Royal Sluis, 2 = Harris-Moran, 3 = Peto, 4 = Bejo, 5 = Abbott and Cobb.

³Head density is a relative value calculated from head weight and the volume of a box created by measurements of width and depth of head. Five heads were measured at each harvest (or less if fewer were harvested).

⁴Tons/acre adjusted to 20 plants/plot.

Table 7. Percent of total cauliflower heads harvested on harvest days, observation plots, June 26 planting, Corvallis, 1992.

Variety	Days from Transplanting										Total No. Heads
	61	68	75	82	89	96	103	110	117	124	
Mariposa					30	20	45		5		20
HMX 8180					5	16	16	32	26	5	19
Ravella	5	21	26	32	16						19
McKinley					11	47	16	21	5		19
HMX 8178					60	25	10	5			20
Cumberland			10	20	30	25	15				20
PSX 518789		5		20	45	15	10			5	20
Tofar			5	15	45	20	10	5			20
Starbrite Y		29	29	19	19	4					21
Rushmore	5	30	45		15						20
Fargo		4	10	24	24	14	10	14			21
HMX 8179					11	11	33	28	17		18
PSX 500485							45	30	20	5	20

Table 8. Percent of total cauliflower heads harvested on harvest days, observation plots, July 24 planting, Corvallis, 1992.

Variety	Days from Transplanting									Total No. Heads
	69	76	83	90	97	104	111	118	125	
Mariposa				10	5	55	30			20
HMX 8180								10	90	10
Ravella		5	26	53		16				19
McKinley					12	53	24	12		17
HMX 8178				42	42	11	5			19
Cumberland			13	47	33					15
PSX 518789			11	42	26	16	5			19
Tofar				6	22	56	17			18
Starbrite Y		5	37	53	5					19
Rushmore		5		68	21	5				19
Fargo				15	60	25				20
HMX 8179					85	15				20
PSX 500485					47	53				19
Snowpak					33	67				18
S88001		25	8	33	8	17	8			12
Batsman					5	21	47	16	11	19