

UCCE SAN JOAQUIN COUNTY ASPARAGUS RESEARCH PROGRESS REPORT, 2013

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Asparagus Variety Evaluation Trial established in 2007

This trial was established with one-year-old crowns in March of 2007 at Klein Family Farms, on Rindge Tract near Stockton, California. Asparagus lines included were from the breeding programs of UC Riverside, Rutgers University, California Asparagus Seed and Transplants, Aspara Pacific Ltd. and Brock Seed Company. The trial contains forty-four lines in total; sixteen in replicated blocks of green asparagus varieties, and twenty-nine in the observational block of green varieties. The crowns were grown at a fumigated nursery site with loamy sand soil near Manteca. At planting, the one-year-old crowns were placed just over 8" apart within the row on 5.5 foot beds (center to center), for a plant population equivalent to 11,647 plants per acre. Stand establishment was evaluated during the summer of 2007 and was good to excellent for all varieties. The soil type at the trial site on Rindge Tract is an Egbert Muck.

In 2013, the variety trial was harvested for the sixth year; we cut the trial 29 times over a 67-day period from March 11th to May 17th. Once again, the best performing line was FCE4 x M256, which ranked first in quality and second in total yield. Over the six years of harvest, the yield of FCE4 x M256 has been equal or higher than UC157 and the spear quality has been higher in each year. Average spear size tends to be fairly similar to UC157. See Table 1 and Figure 1 for yield data for all six years, and table 3 for 2013 data.

In the observational block of the trial, where twenty-nine varieties are evaluated only in a single row plot, the highest yielding lines were F189 x MCE4, F582 x MCE4, and F597 x MCE4. In all, 22 observational varieties out-yielded UC157 this year, and many had spear quality ratings higher than UC157. See Table 2 for cumulative yield from observational plots; note that data from the observational trial should be viewed with less confidence than replicated data.

Chemical control of European Asparagus Aphid

We were not successful in obtaining EAA control data from this year's insecticide trial.

Table 1. Yield and spear quality of asparagus lines evaluated in a replicated trial planted in 2007 at Klein Family Farms, Rindge Tract.

Variety/line	Yield (lbs/acre) ^x							QUALITY
	2008	2009	2010	2011	2012	2013	6-yr cumulative (rank)	RANKING
NJ 1031	1,282 a	2,923 (11)	5,689 (6) ab	7,790 (1) a	5,395 (3)	6,190 (1) a	29,269 (1)	14
FCE4 x M256	915 abc	3,659 (1)	6,044 (2) ab	6,929 (2) ab	5,778 (2)	5,878 (2) ab	29,204 (2)	1
NJ 953	1,355 a	3,531 (3)	6,044 (3) ab	6,928 (3) ab	4,661 (11)	5,304 (3) abc	27,822 (3)	16
FCE6 x M256	833 abc	3,423 (6)	5,969 (4) ab	5,333 (13) abc	6,024 (1)	4,765 (9) bcd	26,347 (4)	10
FCE2 x M256	763 bc	3,576 (2)	6,685 (1) a	6,472 (4) abc	3,507 (16)	4,825 (8) bcd	25,828 (5)	6
DePaoli	891 abc	3,332 (7)	5,862 (5) ab	6,141 (5) abc	4,381 (13)	5,073 (5) abcd	25,680 (6)	5
UC 157	1,078 ab	3,459 (5)	5,218 (7) ab	5,684 (6) abc	4,725 (9)	4,834 (7) bcd	24,997 (7)	8
Grande	1,015 abc	3,477 (4)	5,003 (9) ab	5,576 (8) abc	5,198 (6)	4,484 (13) cde	24,753 (8)	11
Pacific 2000	907 abc	3,271 (9)	4,879 (10) ab	5,624 (7) abc	4,664 (10)	5,124 (4) abc	24,470 (9)	13
NJ 1019	627 bc	2,570 (15)	5,008 (8) ab	5,501 (9) abc	5,356 (4)	4,666 (11) bcde	23,728 (10)	9
FCE3 x M256	532 c	2,816 (13)	4,847 (11) ab	5,367 (12) abc	4,829 (7)	4,542 (12) cde	22,933 (11)	4
F582 x M256	661 bc	2,957 (10)	4,292 (15) ab	5,474 (10) abc	4,091 (14)	4,903 (6) abcd	22,378 (12)	7
FCE1 x M256	652 bc	2,821 (12)	4,687 (12) ab	5,383 (11) abc	4,006 (15)	4,752 (10) bcd	22,301 (13)	3
Atlas	1,167 ab	3,300 (8)	4,390 (14) ab	4,398 (15) bc	5,232 (5)	3,380 (16) e	21,867 (14)	12
Apollo	642 bc	2,629 (14)	4,442 (13) ab	4,969 (14) bc	4,443 (12)	3,777 (15) de	20,903 (15)	15
F132 x MCE4	740 bc	1,834 (16)	3,102 (16) b	3,752 (16) c	4,743 (8)	4,019 (14) cde	18,191 (16)	2
Mean	874	3,083	5,126	5,708	4,814	4,782		
P value	<0.0001	NS	0.034	0.0003	NS	<0.0001		
CV (%)	22.9	25.5	23.6	17.9	24.0	10.4		

^x Numbers represent the mean of four observations. Means followed by the same letter are not significantly different according to Tukey-Kramer method ($\alpha = 0.05$)

^y Spear quality ratings based primarily on head tightness. Varieties ranked based on daily quality ratings averaged over the entire season (1 = highest quality)

Table 2. Yield and spear quality of asparagus lines evaluated in an observational trial planted in 2007 at Klein Family Farms, Rindge Tract. Data are from a single plot and should be viewed with less confidence than replicated data.

Variety/line	Yield (lbs/acre)							QUALITY ^z
	2008	2009	2010	2011	2012	2013	6-yr cumulative	RANKING
F582 x MCE4	2,183	4,711	6,714	9,209	7,304	7,519	37,641	2
FCE7 x M120	1,705	4,618	7,625	8,706	7,827	6,517	36,998	10
F189 x MCE4	1,603	3,270	8,817	7,307	7,165	7,597	35,760	1
F597 x MCE4	1,885	4,941	6,891	7,732	6,843	7,307	35,600	3
NJ 956	1,432	3,718	7,189	8,665	6,933	7,205	35,142	19
NJ 951	1,237	4,276	9,017	7,441	6,517	6,272	34,759	23
F181 x MCE4	1,276	4,839	6,421	8,723	6,915	6,030	34,204	5
FCE5 x M256	1,180	3,971	7,350	8,434	6,350	6,225	33,510	14
F172 x MCE4	2,069	5,218	6,279	7,005	5,709	6,084	32,363	4
F608 x MCE4	1,227	3,783	5,490	7,858	6,439	6,675	31,472	7
F132 x MCE2	1,264	3,275	6,267	7,652	5,827	6,539	30,823	13
F586 x MCE1	1,060	4,515	6,388	7,231	4,638	6,071	29,904	17
FCE4 x A1	1,164	3,944	6,393	6,764	5,634	5,905	29,804	22
3 x Phy20	872	3,579	7,065	7,359	5,709	4,551	29,135	26
FCE1 x A1	1,208	3,323	6,237	6,347	4,952	6,989	29,056	20
FCE5 x A1	1,010	2,866	5,977	7,286	5,380	5,221	27,740	24
F582 x A1	959	3,486	6,114	7,076	5,086	4,596	27,317	25
F583 x MCE4	1,599	3,598	4,518	6,046	5,199	6,212	27,172	6
F177 x MCE4	983	3,467	5,836	6,416	5,011	5,440	27,153	9
FCE7 x M256	989	3,446	4,386	6,533	6,232	5,296	26,881	16
F608 x MCE2	1,089	3,206	4,535	6,289	5,402	5,825	26,345	11
F597 x MCE2	1,693	2,845	4,530	5,137	6,198	5,835	26,238	8
F609 x MCE2	1,218	3,257	4,145	5,868	4,677	5,908	25,073	15
FCE3 x A1	784	3,415	5,034	6,229	4,191	4,543	24,196	18
FCE6 x A1	910	3,301	4,360	4,695	4,731	4,588	22,584	12
F600 x A1	814	2,248	4,452	4,665	4,147	4,512	20,838	27
73 X 22	487	2,348	3,676	4,024	3,465	3,098	17,099	28
74 X 22	626	2,526	3,495	3,814	3,731	2,576	16,769	29
EARLY CALIFORNIA	1,871	2,928	3,895	2,998	2,782	2,025	16,498	21

^z Spear quality ratings based primarily on head tightness. Varieties ranked based on daily quality ratings averaged over the entire season (1 = highest quality)

Table 3. Yield and average spear weight from the 2013 harvest. Note that data on observational varieties are from a single plot and should be viewed with less confidence than replicated data.

REPLICATED VARIETIES

Variety/line	Yield (lb/ac)	Spears/acre	spear weight (g)
NJ 1031	6,190 a	115,311 abc	24.4
FCE4 x M256	5,878 ab	110,768 abcd	24.4
NJ 953	5,304 abc	131,500 a	18.4
Pacific 2000	5,124 abc	116,592 ab	20.1
DePaoli	5,073 abcd	100,751 bcd	22.8
F582 x M256	4,903 abcd	88,405 cdefg	25.4
UC 157	4,834 bcd	89,337 bcdefg	24.7
FCE2 x M256	4,825 bcd	95,976 bcde	22.8
FCE6 x M256	4,765 bcd	93,646 bcdef	23.0
FCE1 x M256	4,752 bcd	85,027 defg	25.5
NJ 1019	4,666 bcde	100,052 bcd	21.6
FCE3 x M256	4,542 cde	95,160 bcde	21.5
Grande	4,484 cde	66,391 fg	30.7
F132 x MCE4	4,019 cde	95,626 bcde	18.9
Apollo	3,777 de	69,536 efg	24.7
Atlas	3,380 e	65,110 g	23.7

OBSERVATIONAL VARIETIES

Variety/line	Yield (lb/ac)	Spears/acre	spear weight (g)
NJ 951	6,272	118,339	24.0
NJ 956	7,205	138,372	23.6
73 X 22	3,098	72,680	19.3
74 X 22	2,576	52,181	22.4
3 x Phy20	4,551	100,169	20.6
F172 x MCE4	6,084	112,748	24.5
FCE3 x A1	4,543	94,578	21.8
F181 x MCE4	6,030	125,327	21.8
F597 x MCE4	7,307	144,429	22.9
FCE7 x M120	6,517	119,270	24.8
F608 x MCE4	6,675	144,429	21.0
F582 x MCE4	7,519	163,531	20.9
FCE7 x M256	5,296	98,771	24.3
F597 x MCE2	5,835	113,680	23.3
F600 x A1	4,512	107,623	19.0
F189 x MCE4	7,597	147,224	23.4
FCE1 x A1	6,989	126,259	25.1
F582 x A1	4,596	80,135	26.0
FCE5 x A1	5,221	102,964	23.0
F609 x MCE2	5,908	116,475	23.0
FCE4 x A1	5,905	120,668	22.2
F177 x MCE4	5,440	125,327	19.7
F586 x MCE1	6,071	106,691	25.8
FCE6 x A1	4,588	74,078	28.1
F583 x MCE4	6,212	98,771	28.5
FCE5 x M256	6,225	135,577	20.8
F608 x MCE2	5,825	100,169	26.4
F132 x MCE2	6,539	148,622	20.0
Early California	2,025	45,192	20.3

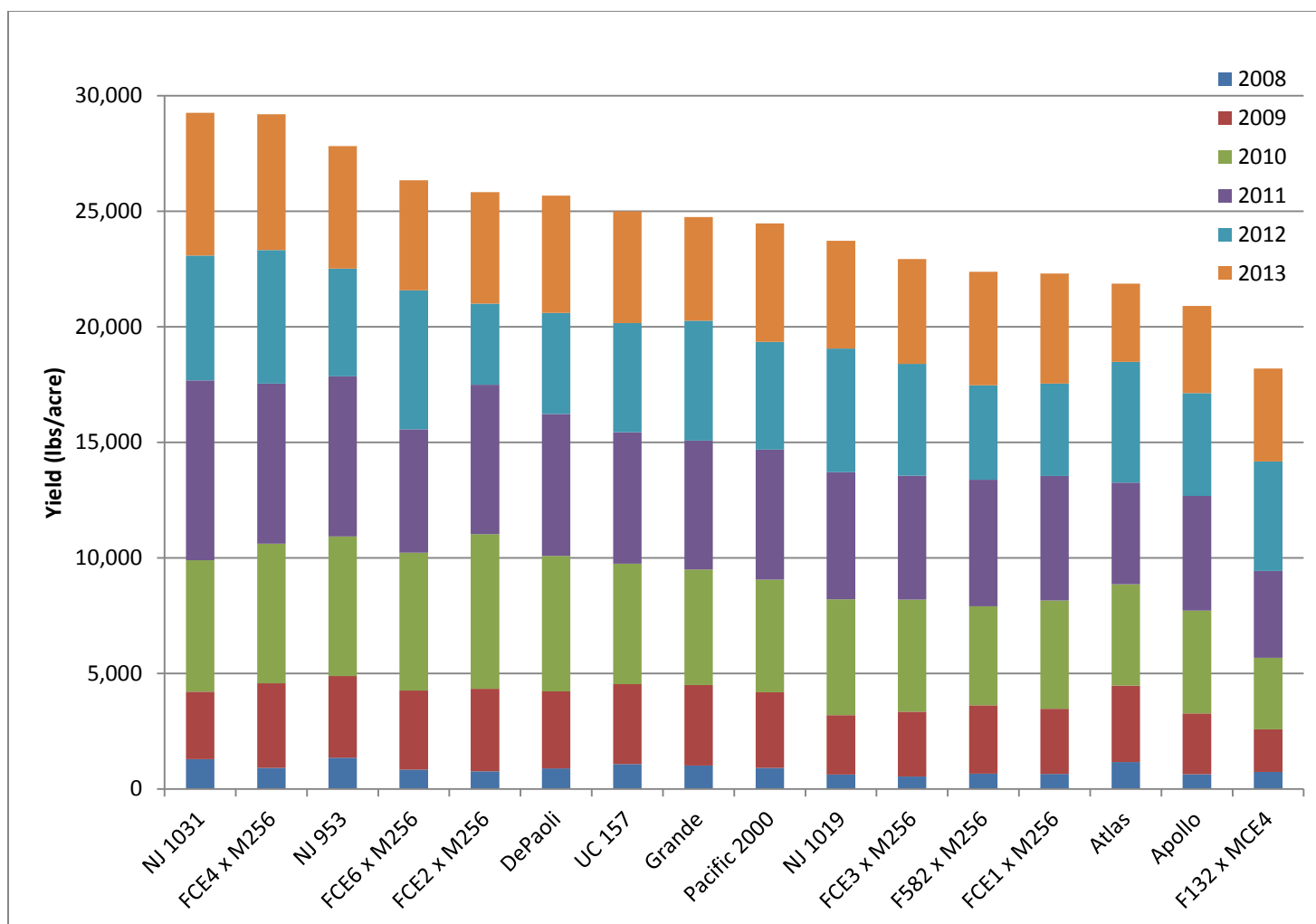


Figure 1. Cumulative yield of experimental asparagus lines over a 6-year harvest period. Numerical data shown in table 1.