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No3 2013 Melon Variety Trial

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MELON VARIETY TRIALS 2013

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URI Melon Variety Trial 2013

Rebecca Brown and Kayleigh Hill

Trial Conditions

The 2013 trial differed from previous years in that all varieties were grown under row covers from transplanting to the beginning of flowering. The two-layer row covers were designed to protect the plants from cucumber beetles (*Acalymma vittatum*) and to increase temperatures to enhance vegetative growth. The inner layer was Proteknet, which is a plastic mesh that excludes beetles without blocking light or trapping heat. The outer layer was slitted clear plastic.

Melons were grown on raised beds covered with black plastic mulch. Water and fertilizer were provided through a single line of drip tape on each bed. Each plot contained 10 plants in a single row with 2 foot spacing. Alleys between beds were seeded to perennial ryegrass and mowed to control weeds. The trial was transplanted into the field the first week of June, 2-3 weeks later than planned. The delay was due to issues in the transplant production greenhouses. Flowering began June 25, and harvest began July 29. Natural pollinators were supplemented by purchased bumblebees. The last harvest was August 21; by this point downy mildew had severely damaged the plants. Varieties were rated for susceptibility to a vine decline condition which has been observed at the URI Agronomy Research Center, and to angular leafspot. This observed vine decline is typified by wilting and death of leaves and then vines during fruit ripening. Plants consistently test negative for bacterial wilt. The cause is unclear, but cucumber beetle feeding, sub-acute infection with root and crown pathogens, and physiological stress are likely all involved. Susceptibility to it is measured by visually assessing plants on a 1-9 scale where 1 indicates complete death and 9 indicates a healthy, asymptomatic plant. Assessments begin at the first symptoms of vine decline and are repeated at weekly intervals until the end of harvest. The weekly scores are then summed to give the overall score, which ranges from 4 to 36. All entries were resistant to powdery mildew.

Melon yields and quality can be dramatically influenced by weather conditions, especially during fruit set and ripening. July 2013 was warmer and drier than usual, with temperatures during the first half of the month setting records. However, once the heat wave broke temperatures were below normal for the remainder of the summer, with a mean high in August of only 81°F. Precipitation in August was near normal, with major rain events on the 2nd, 9th, and 26th.

Cantaloupe Variety Performance

Twenty of the varieties in the trial were American cantaloupes, with orange flesh and tan to yellow reticulated rinds (table 1). A full range of cantaloupe types were represented, including eastern market, western shipper, Tuscan, Caribbean, and Mediterranean. Fruit sizes ranged from under 2 lbs for personal-sized varieties such as 'Sugar Cube' to over 10 lbs for large shipping varieties such as 'Avatar'.

Sugar levels were lower than in past years, probably because of the cooler temperatures during fruit ripening. Average brix scores were mostly in the 6-8% range, which is too low for fruit to be graded USDA Fancy.

The top varieties for number of marketable fruit were 'Sugar Cube', 'Maverick', 'Wrangler', and 'Fantasista' with total yields of 25, 24, 20, and 19 fruit respectively. Top varieties for total weight were 'Avatar', 'Maverick', 'Cleopatra', and 'Fantasista'. '**Wrangler**' was the overall best variety in the trial, despite middling performance for weight of marketable fruit. The Tuscan-style melon had the highest brix, averaging 11.2 with low variability among the samples. It was the only variety to produce over the entire harvest period, with a total of 8 harvests. Response to vine decline and to angular leafspot was moderate. '**Sugar Cube**' produced a large number of small fruit. It is a mid-season variety, with 4 harvests between August 6 and August 15. In past years 'Sugar Cube' has been very sweet, as might be expected from its name, but this year it averaged only 6.7% brix. 'Sugar Cube' has good tolerance to vine decline but is susceptible to angular leaf spot. '**Maverick**' produced a large number of medium-sized fruit, and was the best overall for yield. It is an earlier variety, ripening from August 1 to August 12. Brix was only 7.4 but flavor was good. Disease tolerance is good for an early-ripening variety. '**Fantasista**' is similar to 'Maverick' but ripens about a week later and has slightly larger fruit. It appears to be resistant to angular leafspot, and had the highest vine decline score in the trial. '**Avatar**' is a western cantaloupe with very large fruit. Most plants only produced a single fruit, which averaged 9.7 lbs. Only 9 marketable fruit were produced in total, although another 3 fruit were unmarketable only because of woodchuck damage. '**Cleopatra**' is a large-fruited eastern market variety, averaging 5.1 lbs. It has a long harvest season, and moderate disease tolerance.

Specialty Variety Performance

The trial also included nine specialty melon varieties (Table 2). Four of the varieties were galia melons. Galias were originally developed in Israel by crossing cantaloupes with honeydews; the resulting melons are sweet and juicy with green flesh and a netted yellow rind. Although originally bred for greenhouse production, modern disease-resistant hybrids are well-suited to the field and to low tunnels. The four varieties trialed in 2013 were 'Arava', 'Diplomat', 'Rona', and 'Visa'. '**Visa**' and '**Diplomat**' yielded the most fruit, while '**Rona**' had the largest fruit and produced the most weight. '**Rona**' also had the highest brix, followed by '**Arava**'. Galia melons can be very susceptible to cucumber beetle feeding on roots and crowns. Fruit on affected plants ripens, but does not develop netting and has extremely low sugar levels. '**Rona**' appears to be significantly less susceptible than the other varieties, while '**Visa**' has consistently been very susceptible in our trials.

The other specialty melons in the trial were the ananas melon 'Ein Dor', the charantais melon 'Riviera Sweet', the European cantaloupe 'Edonis', and the canary melons 'Natal' and 'Tweety'. None of these varieties did well in our trial. The canary melons are very susceptible to vine decline, such that they do not ripen properly before the vines collapse. 'Edonis' tends to crack, making the fruit unmarketable. 'Ein

Dor' and 'Riviera Sweet' are late, such that they had significant unripe fruit in late August when downy mildew killed the plants.

Table 1. Cantaloupe Variety Performance Data

Variety	Type	Fruit ^a	Weight (lbs)	Size (lbs)	Harvest Period		Total Hvsts	Brix Avg.	Brix Var. ^b	VD ^c	ALS ^d
Avatar	Western	9	87.3	9.7	8/9	8/21	4	6.3	0.56	23	7
Maverick	Eastern	24	84.75	3.6	8/1	8/12	5	7.4	1.74	22	6
Cleopatra	Eastern	16	81.44	5.1	7/29	8/19	6	6.8	2.06	18	5
Fantasista	Eastern	19	78.56	4.1	8/6	8/21	5	7.7	3.78	29	9
Grand Slam	Eastern	12	74.62	6.2	8/9	8/21	4	7.6	3.32	27	7
Halona	Eastern	16	73.2	4.6	7/29	8/12	6	6.9	0.51	17	5
Goddess	Eastern	16	69.4	4.3	7/29	8/6	4	8.2	4.03	18	5
Tirreno	Tuscan	16	68.56	4.3	8/12	8/21	4	7.1	1.36	20	6
Athena	Eastern	14	61.76	4.4	8/6	8/19	4	7.3	2.40	21	8
Sugar Cube	Western	25	57.16	2.3	8/6	8/15	4	6.7	0.56	26	4
Wrangler	Tuscan	20	54.32	2.7	7/29	8/21	8	11.2	0.47	16	6
Electra	Western	9	51.12	5.7	8/12	8/19	3	7.2	1.51	25	9
Sarah's Choice	Western	12	50.3	4.2	7/29	8/12	7	8.1	2.78	17	3
Orange Sherbet	Tuscan	8	47	5.9	8/6	8/15	4	8.2	1.47	22	8
Ariel	Eastern	8	44.48	5.6	8/9	8/15	3	7.6	0.64	21	5
Victoria	Eastern	10	40.42	4.0	8/9	8/21	5	8.4	2.69	23	8
Abu	Mediterranean	6	34.26	5.7	8/15	8/21	2	6.3	0.89	28	9
Napoli	Tuscan	10	30.02	3.0	8/1	8/19	6	6.8	1.89	14	9
Caribbean Gold	Caribbean	5	20.8	4.2	8/19	8/21	2	8.9	2.04	25	7
Pixie ^e	Western	0	0				0			7	

^a Fruit is the total number of marketable fruit harvested from a 10-plant plot.

^b Brix variance indicates the variation among the brix samples. Lower scores indicate more consistent performance.

^c VD is vine decline, caused by a combination of insect feeding, disease, and physiological stress. Possible scores range from 4 to 36 with higher scores indicating healthier plants.

^d ALS is angular leafspot, caused by the bacterium *Pseudomonas syringae* pv. *Lachrymans*. Disease severity was rated on a 1-9 scale with 9 indicating no disease.

^e The variety 'Pixie' yielded no marketable fruit. This variety appears to be extremely sensitive to VD and has never performed well in our trials.

Table 2. Specialty Melon Variety Performance Data

Variety	Type	Fruit ^a	Weight (lbs)	Size (lbs)	Harvest Period		Total Hvsts	Brix Avg.	Brix Var ^b .	VD ^c	ALS ^d
Ein Dor	Ananas	7	22.3	3.2	8/12	8/21	2	7.3	1.62	19	5
Natal	Canary	3	11.5	3.8	8/6	8/6	1	6.4	0.69	5	
Tweety	Canary	2	14.7	7.4	8/12	8/12	1	8.2	0.47	10	3
Riviera Sweet	Charantais	7	19.8	2.8	8/9	8/21	3	5.8	1.51	12	7
Edonis	European	5	15.7	3.1	8/4	8/9	2	5.6	0.37	10	
Arava	Galia	6	20.4	3.4	8/1	8/12	5	8.5	0.17	12	9
Diplomat	Galia	10	31.8	3.2	7/29	8/9	6	6.7	0.22	13	9
Rona	Galia	9	41.11	4.6	7/29	8/12	5	8.8	2.23	22	7
Visa	Galia	11	35.3	3.2	7/29	8/9	6	7.0	0.64	10	7

^a Fruit is the total number of marketable fruit harvested from a 10-plant plot.

^b Brix variance indicates the variation among the brix samples. Lower scores indicate more consistent performance.

^c VD is vine decline, caused by a combination of insect feeding, disease, and physiological stress. Possible scores range from 4 to 36 with higher scores indicating healthier plants.

^d ALS is angular leafspot, caused by the bacterium *Pseudomonas syringae* pv. *Lachrymans*. Disease severity was rated on a 1-9 scale with 9 indicating no disease. Disease could not be rated on varieties with severe VD.