

# Evaluation of Pitahaya or Dragon Fruit (*Hylocereus* spp.) Varieties for Commercial Production in California

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# Materials and Methods

- 20 pitahaya varieties planted in a randomized complete block design
  - 3 plants per treatment
  - 5 replications
- Single-post trellis system used based on reports from Florida & Nicaragua
- 726 plants acre based on 10 \* 6 spacing
- Sprinkler irrigation weekly @ 2 hrs/week

# Materials and Methods

## 20 Varieties in Original Study

- Cebra (Nic)
- Rosa (Nic)
- Orejona (Nic)
- Lisa (Nic)
- Sin Espinas (Nic)
- San Ignacio (Nic)
- Mexicana (Mex)<sup>2</sup>
- Colombiana (SD/Col)<sup>3</sup>
- Valdivia Roja (Mex)
- Bien Hoa Red (SD)<sup>1</sup>
- Bien Hoa White (SD)<sup>2</sup>
- Delight (SD)
- American Beauty (FL)<sup>1</sup>
- Haley's Comet (FL)
- Physical Graffiti (FL)
- Vietnamese Giant (FL)<sup>2</sup>
- Yellow Dragon (FL/Col)<sup>3</sup>
- Seoul Kitchen (FL)
- Armando (Nic)\*
- El Grullo (Mex)\*



Ave Wt. (grams): 468  
Brix Score: 15.75  
Mkt. Wt./Plant (grams): 8746  
Days to Harvest: 46  
Origin/Source: Nicaragua

# Cebra



Ave. Wt. (grams): 384  
Brix Score: 16.05  
Mkt. Wt./Plant (grams): 7217  
Days to Harvest: 45  
Origin/Source: Nicaragua

# Rosa



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Ave. Wt. (grams): 438  
Brix Score: 15.78  
Mkt. Wt./Plant (grams): 4598  
Days to Harvest: 45  
Origin/Source: Nicaragua

# Orejona



Ave. Wt. (grams): 465  
Brix Score: 17.02  
Mkt. Wt./Plant (grams): 13319  
Days to Harvest: 44  
Origin/Source: Nicaragua

# Lisa



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Ave. Wt. (grams): 393  
Brix Score: 16.5  
Mkt. Wt./Plant (grams): 3527  
Days to Harvest: 43  
Origin/Source: Nicaragua

# Sin Espinas



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Ave. Wt. (grams): 552  
Brix Score: 15.6  
Mkt. Wt./Plant (grams): 12712  
Days to Harvest: 48  
Origin/Source: Nicaragua

# San Ignacio



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Ave. Wt. (grams): 495  
Brix Score: 14.04  
Mkt. Wt./Plant (grams): 9165  
Days to Harvest: 40  
Origin/Source: Nicaragua

# Mexicana



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Ave. Wt. (grams): <200  
Brix Score: 20.90  
Mkt. Wt./Plant (grams): 0  
Days to Harvest: 150-180  
Origin/Source: SD/Col.

# Colombiana



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Ave. Wt. (grams): 250  
Brix Score: 17.9  
Mkt. Wt./Plant (grams): 8588  
Days to Harvest: 40  
Origin/Source: Mexico

# Valdivia Roja



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Ave. Wt. (grams): 360  
Brix Score: 18.9  
Mkt. Wt./Plant (grams): 1477  
Days to Harvest: 41  
Origin/Source: San Diego

## Bien Hoa Red



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Ave. Wt. (grams): 388  
Brix Score: 11.85  
Mkt. Wt./Plant (grams): 7394  
Days to Harvest: 37  
Origin/Source: San Diego

## Bien Hoa White



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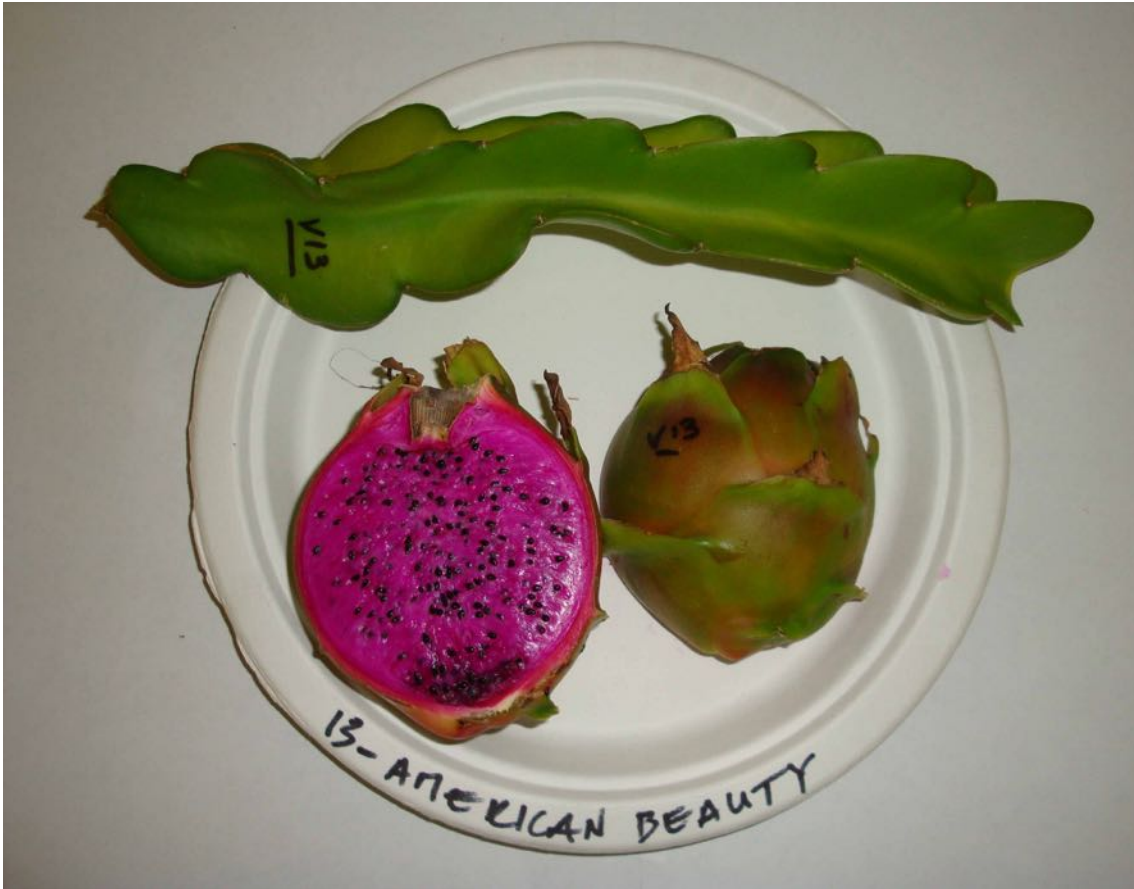
Ave. Wt. (grams): 371  
Brix Score: 18.08  
Mkt. Wt./Plant (grams): 14931  
Days to Harvest: 41  
Origin/Source: San Diego

# Delight



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Ave. Wt. (grams): 380  
Brix Score: 18.51  
Mkt. Wt./Plant (grams): 5566  
Days to Harvest: 43  
Origin/Source: Florida

# American Beauty



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Ave. Wt. (grams): 482  
Brix Score: 16.7  
Mkt. Wt./Plant (grams): 5979  
Days to Harvest: 38  
Origin/Source: Florida

## Haley's Comet



Ave. Wt. (grams): 374  
Brix Score: 17.93  
Mkt. Wt/Plant (grams): 23429  
Days to Harvest: 40  
Origin: Florida

## Physical Graffiti



Ave. Wt. (grams): 338  
Brix Score: 15.6  
Mkt. Wt./Plant (grams): 6511  
Days to Harvest: 41  
Origin/Source: Florida

# Vietnamese Giant



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Ave. Wt. (grams): <200  
Brix Score: 21.15  
Mkt. Wt./Plant (grams): 0  
Days to Harvest: 150-180  
Origin: Florida/Colombia

# Yellow Dragon



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Ave. Wt. (grams): 518  
Brix Score: 12.18  
Mkt. Wt./Plant (grams): 15379  
Days to Harvest: 41  
Origin/Source: Florida

# Seoul Kitchen



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Ave. Wt. (grams): 390.5  
Brix Score: 16.11  
Mkt. Wt./Plant (grams): 4881  
Days to Harvest: 41  
Origin/Source: Nicaragua

## Armando

UC  
CE

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Ave. Wt. (grams):  
Brix Score:  
Mkt. Wt./Plant (grams):  
Days to Harvest:  
Origin/Source: Mexico

# Results

- Most varieties in trial adapted well to growing conditions at SCREC
  - Valdivia Roja, El Grullo\*, Physical Graffiti, Haley's Comet and Lisa most tolerant to heat and cold
- Most selections set fruit **WITHOUT** hand pollination
  - Physical Graffiti, Seoul Kitchen, Delight, Lisa and San Ignacio top producing varieties



# Results

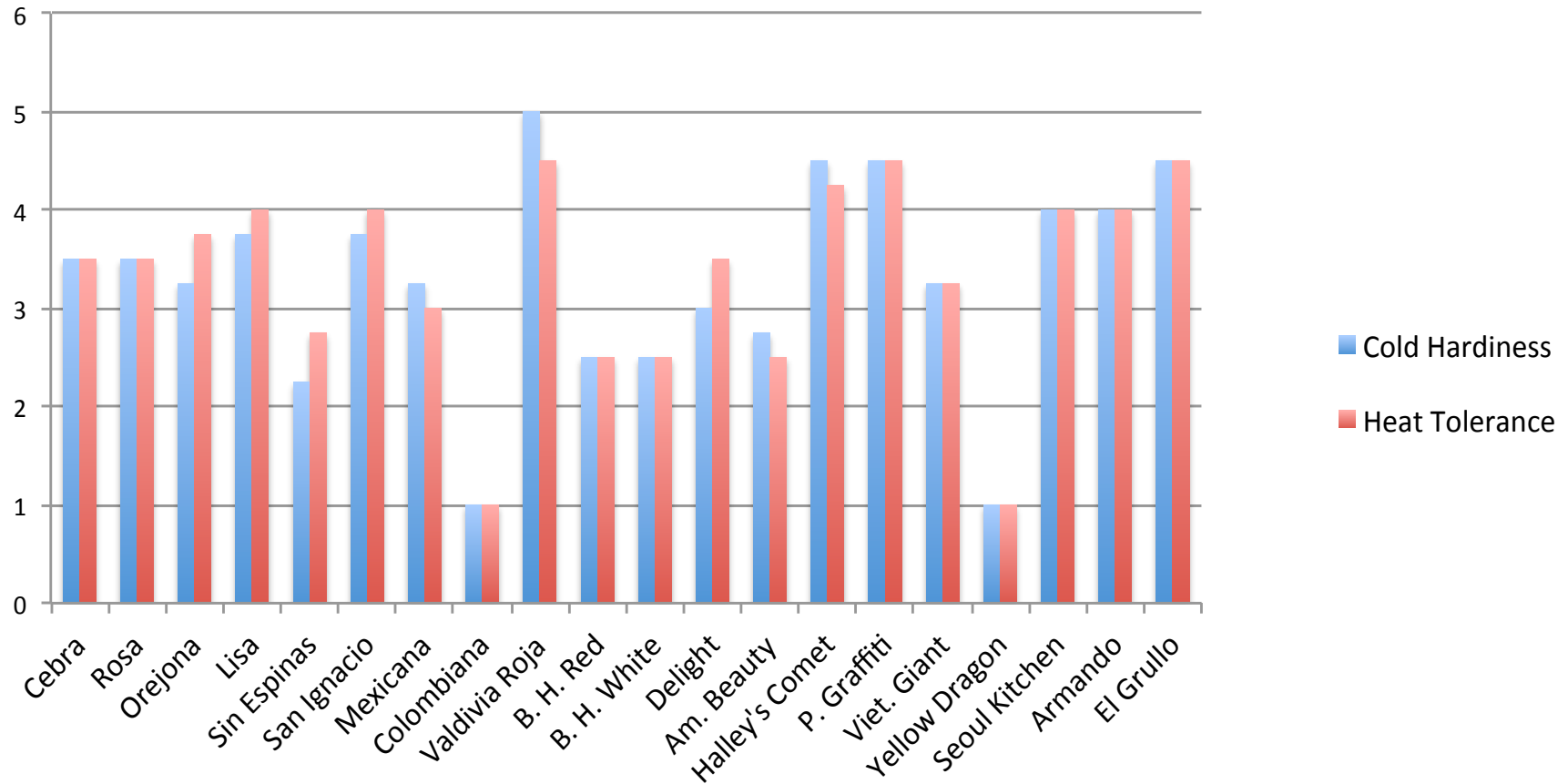
- Most varieties in trial produce well WITHOUT shade, some would benefit from it.
- Fruit size & quality very good, good marketable yields
  - Except for Colombiana/Yellow Dragon, all varieties produced fruit with good market weight
  - Colombiana/Yellow Dragon, Bien Hoa Red/ American Beauty, Delight, Physical Graffiti, Valdivia & El Grullo\* had the highest brix scores

# Pitahaya or Dragon Fruit Variety Evaluation Chart

(For Cold Hardiness & Heat Tolerance: 1 = low tolerance & 5 = High Tolerance)

Variety/Origin	Color Skin/Flesh	Cold Hardiness	Heat Tolerance	Avg. Wt. (grams)	Brix Score	Mkt Wt/Plant (grams)	Days to Harvest
1. Cebra (Nic.)	R/R	3.5	3.5	468	15.75	8746	46
2. Rosa (Nic.)	R/R	3.5	3.5	384	16.05	7217	45
3. Orejona (Nic.)	R/R	3.25	3.75	438	15.78	4598	45
4. Lisa (Nic.)	R/R	3.75	4	465	17.02	13319	44
5. Sin Espinas (Nic.)	P/R	2.25	2.75	393	16.5	3527	43
6. San Ignacio (Nic.)	R/R	3.75	4	552	15.6	12712	48
7. Mexicana (Mex.)	P/W	3.25	3	495	14.04	9165	40
8. Colombiana (SD-Col.)	Y/W	1	1	< 200	20.90	0	150-180
9. Valdivia Roja (Mex.)	R/R	5	4.5	250	17.9	8588	40
10. Bien Hoa Red (SD)	GR/F	1.75	1.75	360	18.9	1477	41
11. Bien Hoa White (SD)	P/W	2.5	2.5	388	11.85	7394	37
12. Delight (SD)	R/PW	3	3.5	371	18.08	14931	41
13. American Beauty (FL)	GR/F	2.75	2.5	380	18.51	5566	43
14. Haley's Comet (FL)	R/F	4.5	4.25	482	16.7	5979	38
15. Physical Graffiti (FL)	R/P	4.5	4.5	374	17.93	23429	40
16. Vietnamese Giant (FL)	PR/W	3.25	3.25	338	15.6	6511	41
17. Yellow Dragon (FL-Col.)	Y/W	1	1	< 200	21.15	0	150-180
18. Seoul Kitchen (FL)	PR/W	4	4	518	12.18	15379	41
19. Armando (Nic.)	R/R	4	4	390.5	16.11	4881	41
20. El Grullo (Mex.)*	R/R	4.5*	4.5*	489*	18.11*	U/K	40

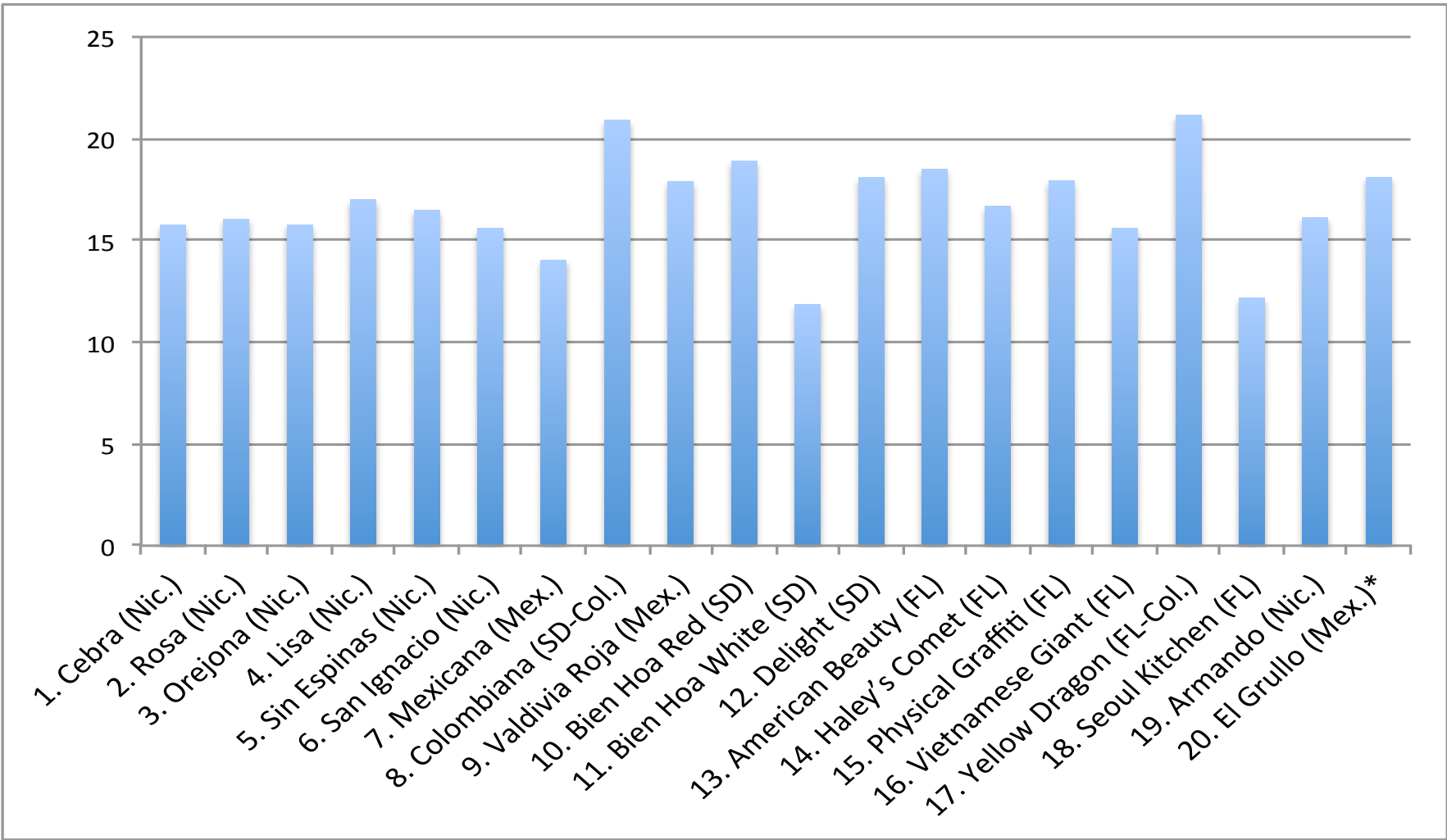
# Relative Cold & Heat Tolerance



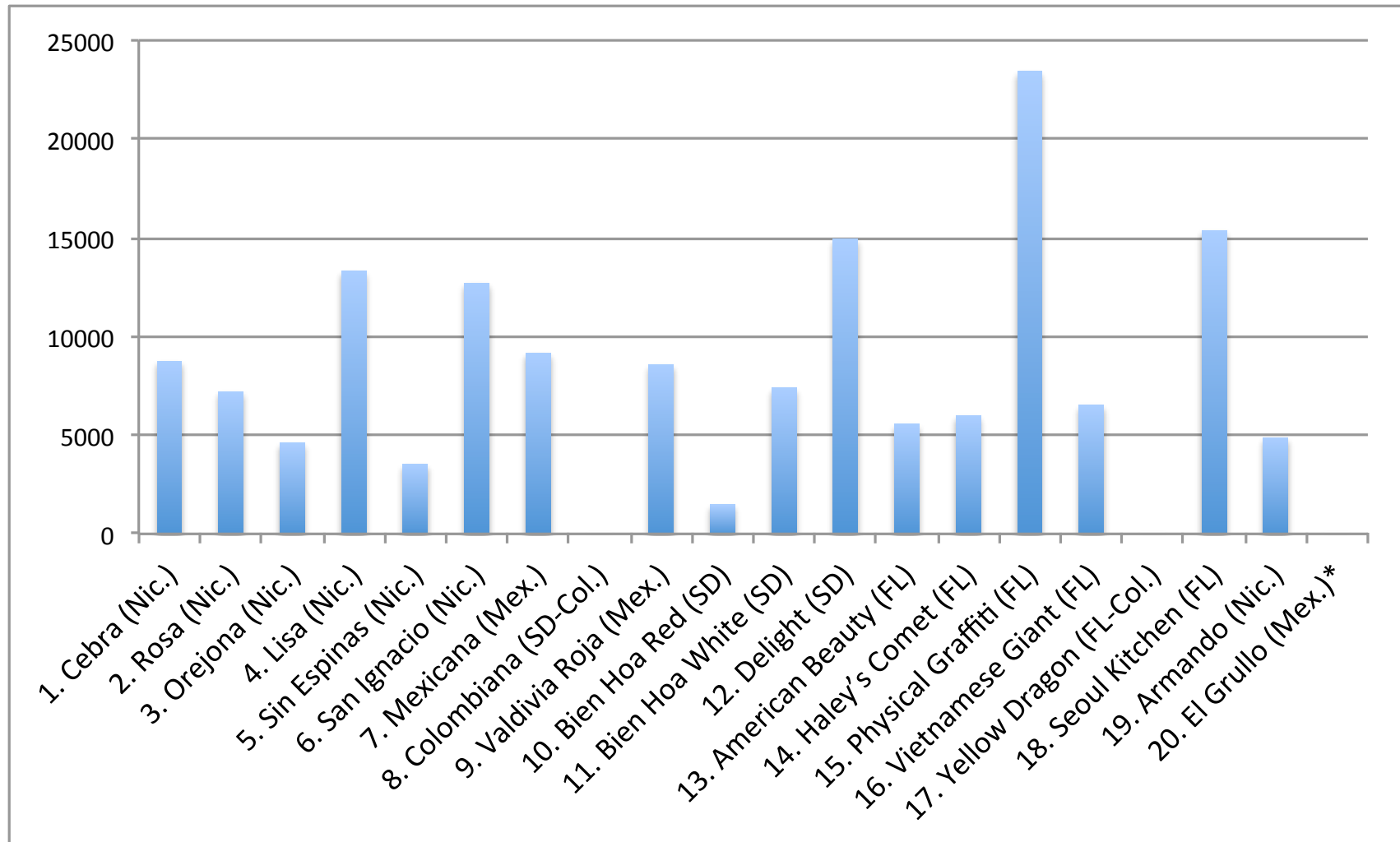
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# Brix Scores



# Fruit Production/Plant



# Consumer Preferences?

- External appearance:
  - Sin Espinas, Lisa, Physical Graffiti, Delight, American Beauty and Bien Hoa Red
- Flavor where flesh color is visible:
  - American Beauty, Bien Hoa Red, Physical Graffiti, Delight, Sin Espinas and Lisa
- Flavor in a blind test, flesh color masked with light:
  - Bien Hoa Red, American Beauty, Physical Graffiti, Sin Espinas and Lisa
- Clear differences among varieties in terms of sugars, acids, and antioxidant content

# Pitahaya Guide



# Several Others Cultivars Under Observation

