

Rainbow on my Table

Color my Food Healthy

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Criteria of Product Appeal for Small-Scale growers

- Seasonality (?)
- Freshness (locally grown)
- Appeal (esthetically)
- Safety (no pesticides or microbial contamination)
- Flavor (Mmm, good!)
- Sustainability
- Nutrition & health (minerals and vitamins & antioxidants)

Criteria of Product Appeal

Seasonality
(?)



Criteria of Product Appeal

Freshness
("locally"
grown)

*To your table within
hours of harvest*



Criteria of Product Appeal



Safety (no pesticides or microbial contamination)

Criteria of Product Appeal

Sustainability

Environmental

Economic

Social

Criteria of Product Appeal

Appeal (esthetically)

Criteria of Product Appeal

Appeal (esthetically)

Nutrition & health (minerals and
vitamins & antioxidants)

Criteria of Product Appeal

Appeal (esthetically)

Nutrition & health (minerals
and vitamins & antioxidants)

Flavor (Mmm, good!)

Color me

Beautiful

Colors ...



are ...



... beautiful...



...and...



... attractive...



... attractive!



Inside and Out





Color me

Healthy

Colors are
Healthy

EAT YOUR COLORS

- EAT YOUR COLORS TO STAY HEALTHY AND FIT!
- It's important to get a colorful variety of fruits and vegetables into your diet every day! Why? Because colorful fruits and vegetables provide the wide range of vitamins, minerals, and **phytochemicals** your body needs to maintain good health and energy levels.

“Colorize your Diet”

"Be drawn to brightly colored fruits and vegetables"

Dr. Daniel Nadeau, a professor at Tufts Medical School and co-author of *The Color Code: A Revolutionary Eating Plan for Optimum Health*.

Time on line 1/15/07. <http://www.time.com/time/magazine/article/0,9171,1000331,00.html>

... there is nothing more beautiful and tempting in a modern market than the expansive array of colorful produce, their vivid skins all the more enticing because of their health-promoting benefits. And even the paler members of this community - garlic, onions, leeks, cabbage, celery and the like - have notable health-promoting virtues.

David Heber, director of the Center for Human Nutrition at the University of California at Los Angeles --"*What Color Is Your Diet?*" --Regan Books

Fruits and **vegetables** come closer than any other category of food to behaving like a fountain of youth. Each one is power-packed with plant-based chemicals, or **phytonutrients**, that can help to prevent or even reverse one or more chronic, debilitating and often deadly diseases.

Fruit and vegetables & Lung Cancer

Total fruit and vegetable consumption was associated with a modestly lower risk of lung cancer among the women but not among the men.

total fruit and vegetable consumption was associated with a lower risk of lung cancer among non-smokers in the combined cohorts, although the reduction was not statistically significant

What's in a Color?

- Colors in vegetables (plants) are three:
- Chlorophylls
- Caratenoids
- Anthocyanins

Color me Healthy- Green

- A lower risk of some cancers*
- Vision health
- Strong bones and teeth

damage to DNA by aflatoxin can be decreased as much as 55% through supplementation with chlorophyllin

What's in a Color?- Chlorophyll

- Green color:
 - Photosynthesis
 - Sugar production



Fruit and vegetables and Strokes

An increment of 1 serving per day of fruits or vegetables was associated with a 6% lower risk of ischemic stroke.

Cruciferous vegetables green leafy vegetables, citrus fruit including juice, and citrus fruit juice contributed most to the apparent protective effect of total fruits and vegetables.

[JAMA](#). 1999 Oct 6;282(13):1233-9

* *Stroke where blood supply to part of the brain is decreased, leading to dysfunction and [necrosis](#) of the brain tissue in that area*

Oriental
Vegetables:
Chinese Broccoli
-Kale-(Jie Lan)
Gailan



Garland Chrysanthemum.-

Chrysanthemum coronarium

Juhua; tong ho





Garland Chrysanthemum--

Chrysanthemum coronarium



Edamame-

Glycine max



Edamame



Asparagus Bean



Onion Sprouts



Stems and Flowering buds



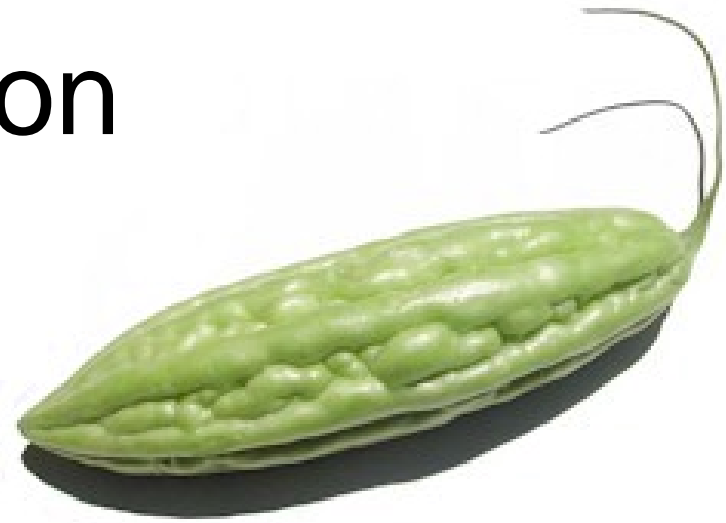
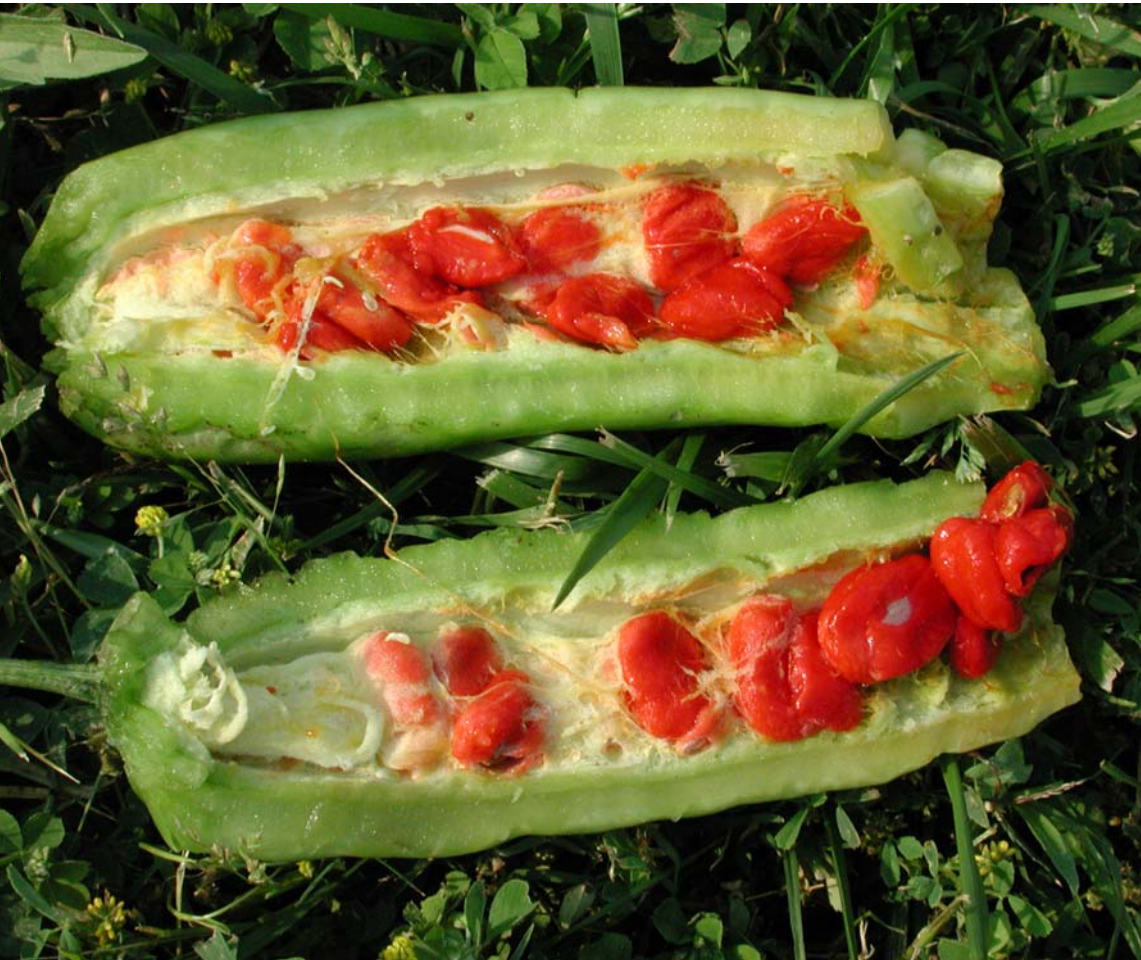
Chinese Chives



Chinese celery



Bitter Melon





Color me Healthy- Red: *Lycopene*

- Heart health
- Memory function
- A lower risk of prostate
- Urinary tract health

What's in a Color?-Carotenoids

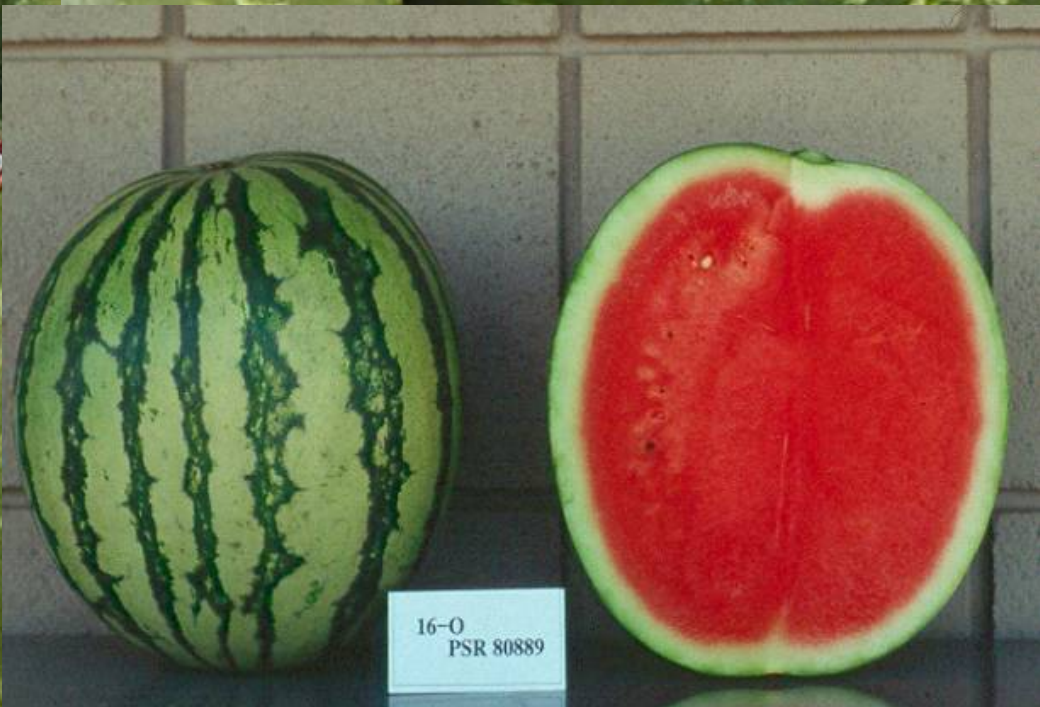
- Yellow, orange, and red
- 300 carotenoids
- All related to **lycopene**--red
- **Antioxidants**
- Some converted to retinol (vit. A)

Carotenoids

The most common carotenoids include **lycopene** and the vitamin A precursor β -carotene. In plants, the xanthophyll lutein is the most abundant carotenoid and its role in preventing age-related eye disease is currently under investigation. Lutein and the other carotenoid pigments found in leaves are not obvious because of the presence of other pigments such as chlorophyll.



Watermelon



16-O
PSR 80889





Camarosa



Chandler

Strawberries



Diamante



Seascape



The all
American
tomato



Color me Healthy- Yellow

The background of the slide features three slices of yellow squash or pumpkin, arranged in a triangular pattern. The slices are cut into thin, round pieces, showing the characteristic spiral pattern of the vegetable's interior. They are set against a light, textured background, possibly a countertop or table. A bright yellow horizontal band is at the top, and a semi-transparent light blue box is at the bottom, both containing text.

- lutein (carotenoid)
may protect the eyes
Lower risk for macular degeneration



15-R HONEYHEART

Crysanthemum flower-tea





Carrots



Color me Healthy- Orange

- Heart health
- Vision health
- A healthy immune system
- A lower risk of some cancers*

Orange Sun

What's in a Color?-Carotenoids

- Yellow, orange, and red
- 300 carotenoids
- All related to **lycopene**--red
- **Antioxidants**
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Antioxidants

An *Antioxidant* is a molecule capable of slowing or preventing the oxidation of other molecules.

[*Oxidation* is a chemical reaction that transfers electrons from a substance to an oxidizing agent.]

Low levels of antioxidants can causes oxidative stress that may damage or kill cells.



E49.9523

Color me
Healthy-
Orange





Color me
Healthy-
Orange

Color me Healthy- Purple-*Anthocyanins*

- A lower risk of some cancers*
- Urinary tract health
- Memory function
- Healthy aging
- Lower cholesterol absorption

Tequila

What's in a Color? - Anthocyanins

- Red, purple, and “bluey”
- In flavonoid class
- Leak out during cooking
- pH sensitive: pH ↓ ==> red
pH ↑ ==> yellow/blue

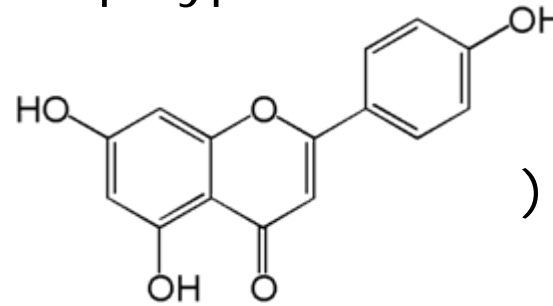
Anthocyanin Pigments

For decades, botanists and plant physiologists expressed interest in Anthocyanin pigments (that give fruit and vegetables their purple, red, and blue colors) for their ability to attract pollinators and provide phytoprotective qualities.

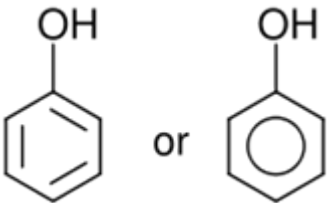

Today, interest is focused on the health benefits of these pigments as dietary antioxidants.

Flavonoids

- **Flavonoids**: secondary plant metabolites known for antioxidant qualities. Ex. polyphenols



- Plant **polyphenols** (several (>5,000)) made up of

- **Phenols** ( or  = C₆H₅OH) formerly carbolic acid, a toxic substance

Fruit & vegetable and Women cardiovascular

These data suggest that higher intake of fruit and vegetables may be protective against CVD and support current dietary guidelines to increase fruit and vegetable intake.



Tequila



Purple Beauty



Purple Beauty



Organic Blueberry



24

Imperial Star

Colorado red



Color me Healthy- Purple



Color me Healthy- White

- Heart health
- Cholesterol levels that are already healthy
- A lower risk of some cancers*

Blushing beauty

Chinese Chive;
Nila (Jiu cai)



*White
pepper*



giant szegdi Hyb

Shallots & Onions



Shallots and Onion: antioxidants

Shallots contained the highest total phenolic content and the highest total antioxidant activity followed by Western Yellow, New York Bold, Northern Red, Mexico, Empire Sweet, Western White, Peruvian Sweet, Texas 1015, Imperial Valley Sweet, and Vidalia.

Daikon- Asian Radish



White Carrot



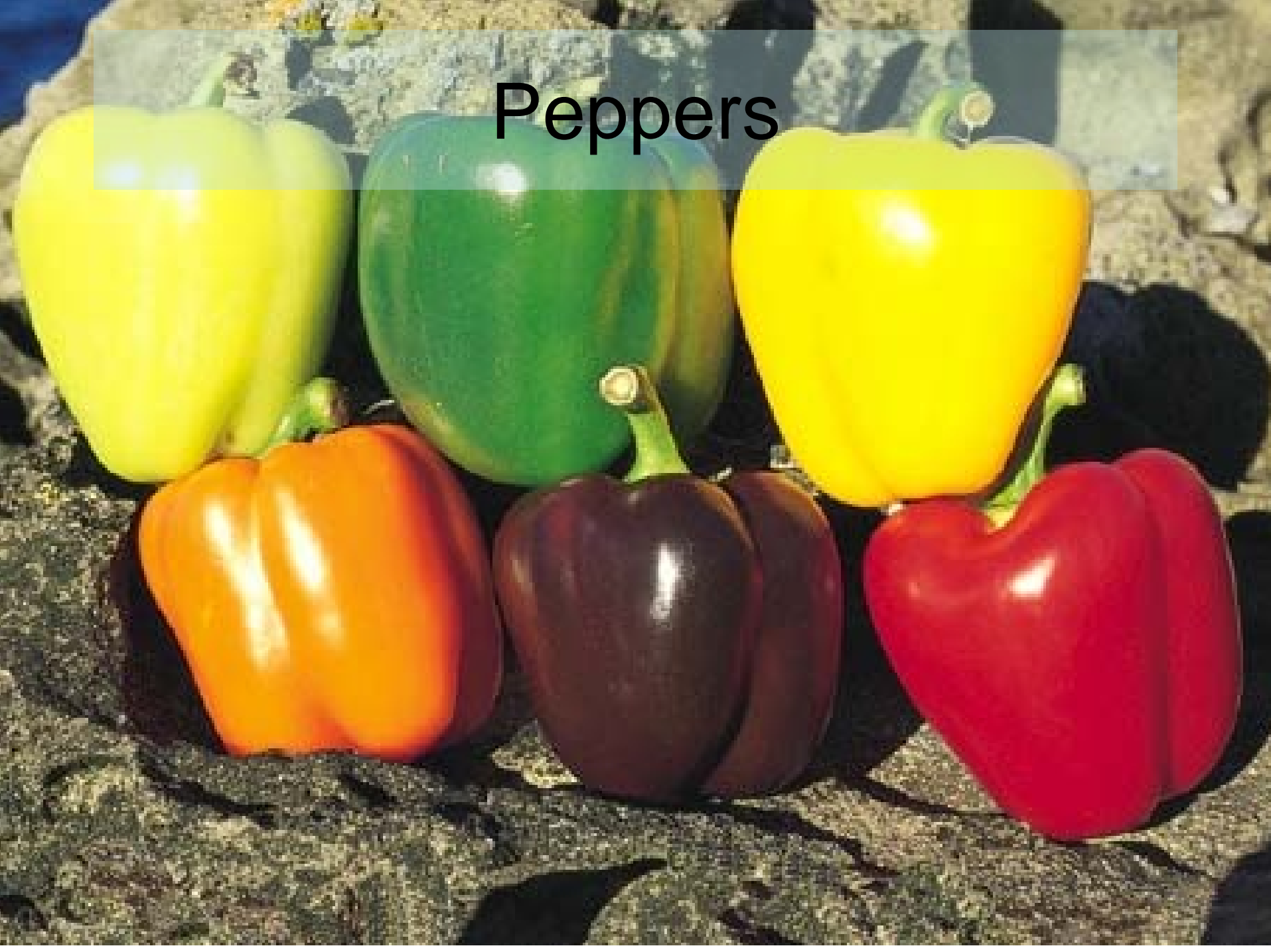
Color me Healthy- Rainbow



Eating the full rainbow assortment of fresh raw fruits and vegetables on a regular...is the key to giving your body the **nutrients** it needs to **build cells** right and strengthening your **immune** and **detoxification** systems so they can do a better job of **fighting off disease and aging**.



Peppers



Carrot-more colors



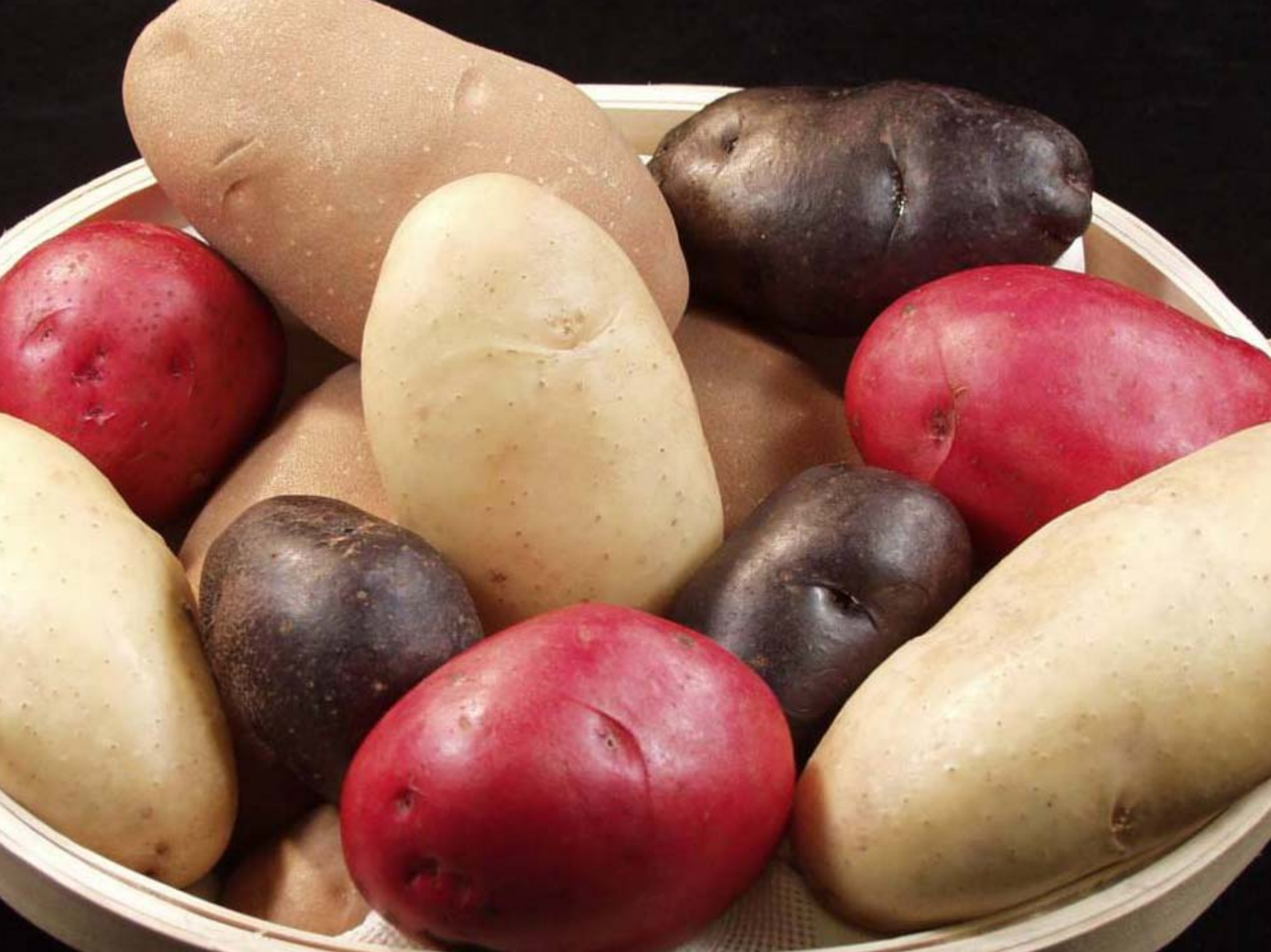


This is your father's Carrot









Asian Eggplant



© Jan Cobb

Eggplants



Thai Eggplants



Indian Eggplants



Filipino Eggplants



Color me

Flavorful

Flavor, the sensory impression of a food that is determined mainly by the chemical senses of *taste* and smell

*This effort is in cooperation with Maria Giovanni
NFCS Advisor-S Clara County.*

Que C'est Bon!

Healthy and Tasty





Mum tea

Personal Seedless W/melon Sweetness

Name	Color	% Brix
Bambino 1712	Dark red	13.5
RWT 8149	Orange-red	12.7
Bambino 1714	Red	12.6
Valdoria	Red	12.6
Petite Perfection	Light red	12.2
Betsy	Orange-red	12.1



Sweet Pepper are Sweet!

Code	Entry	Color	% brix
27	E49.9531	Orange- <i>mini bell</i>	9.0
29	Oranos	orange- <i>long</i>	8.8
34	E49.9526	Yellow-orange <i>mini b</i>	8.8
30	Xianthi	Yellow-orange <i>long</i>	8.6

Sweet Pepper are Sweet!

Code	Entry	Color	% brix
10	Vidi Hyb	Orange	7.5
26	Mahi	Red	7.4
35	E49.9523	Red Small elong.	7.4
6	Golden Calwonder	White	7.3
21	Golden Sun	Red-orange	7.2
3	Ariane Hyb	Yellow	7.1
9	Orange Sun	Ivory	7.0
18	Valencia	Purple	7.0
22	GY 3002	Yellow-gold	7.0
25	Moonset	Yellow	7
32	Magno	Orange	7.0
4	Early Sunsation	Orange	7.0



Pigmented carrot Acceptance: Would Eat

Most desirable (85%):	19 213-1	23 305-1	30 206			
Good (70%):	3 005-2-	18 7047	2 131-7	9 203-6	17 218-7	21 218-1
NO (>50%)	29 70504	8 122-3	4 102-2	6 205-1	22 70516	10 218-4

Pigmented Carrot Flavor

Excellent	19 213-1	32 Purple Haze	9 203-6	12 203-6
V. Good	33 70514	23 305-1	24 Rainbow	
Good	17 218-7	31 70370	18 70478	5 70474
Terrible	29 70504	35 702-5	10 218-4	8 122-3

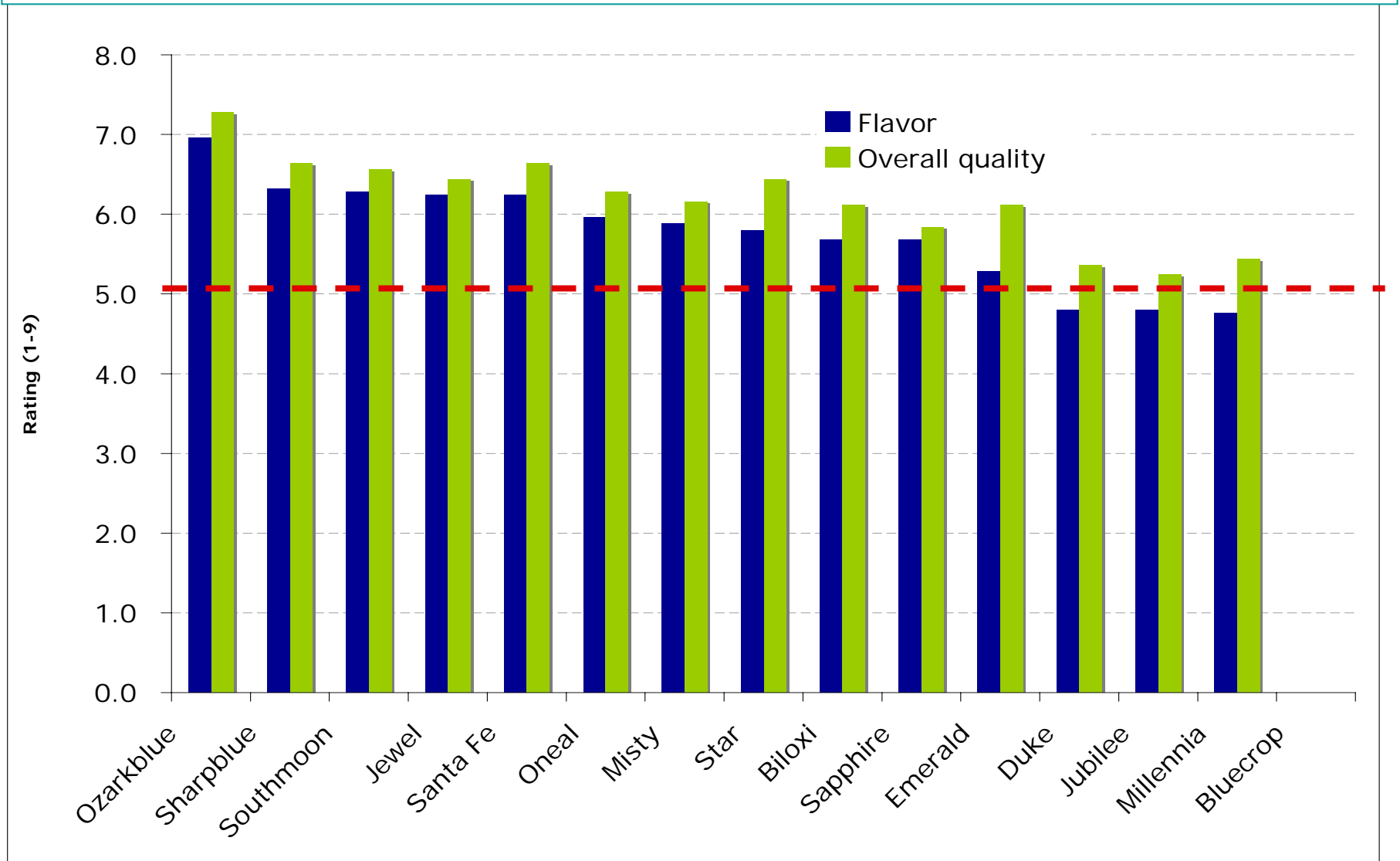




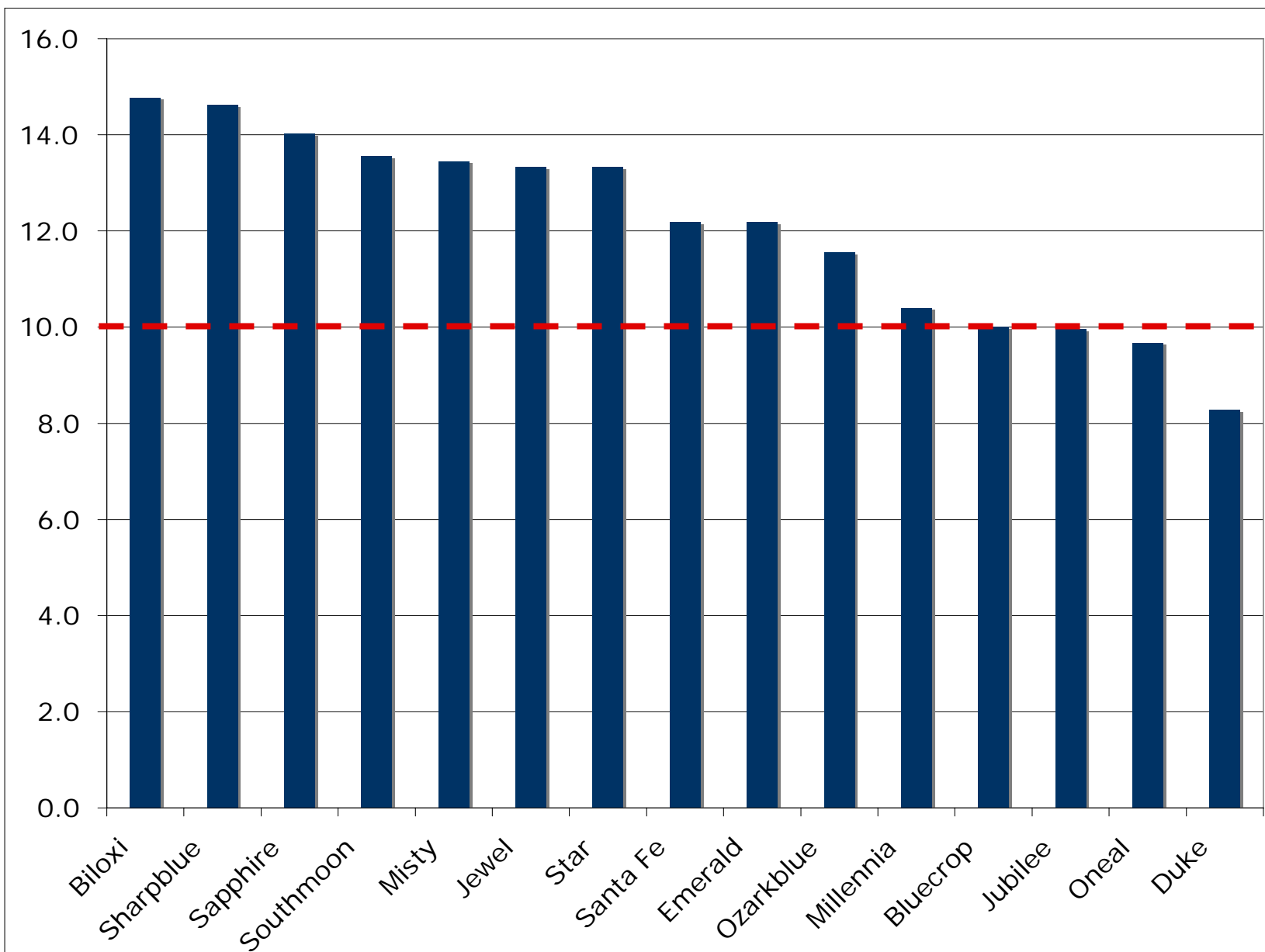
Blueberry Evaluation-'05

Flavor	Sweetness
Southmoon	Sharpblue
Biloxi	Oneal
Jubilee	Southern Belle
Sharpblue	Millennia
Ozarkblue	Biloxi
	Jewel

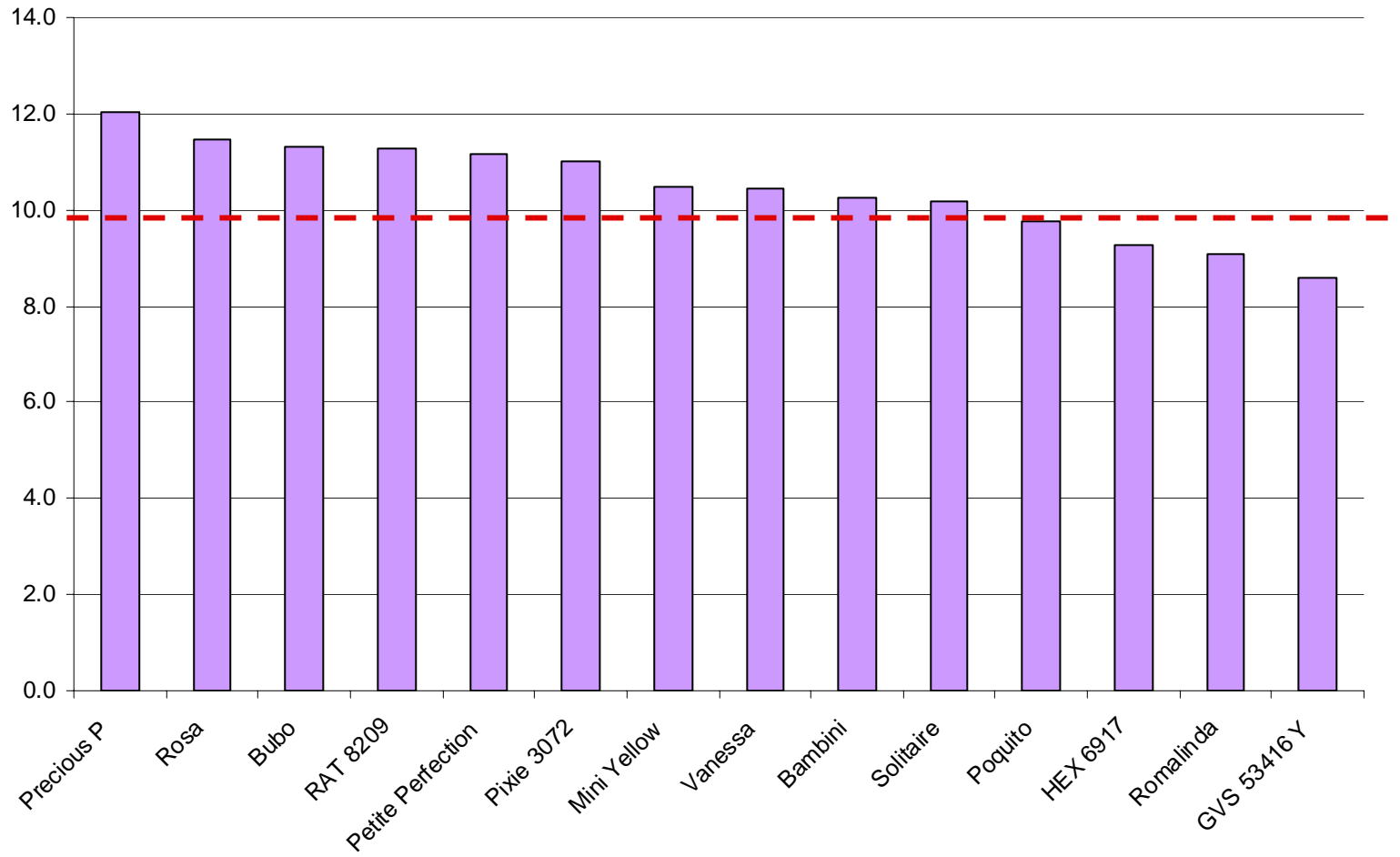
Organic Blueberry Flavor & Overall Sensory Quality



Organic Blueberry: Sugar (%Brix)—'07



Personal Seedless W/melon: %Brix--'07



Entry name	No.	Ranking	Brix
HEX 6917	12	1	12
Bambini	9	2	9
Mini Yellow	7	3	7
Petite Perfection	5	4	5
Solitaire	10	5	10
Poquito	11	6	11
Rosa	2	7	2
Vanessa	8	8	8
Pixie 3072	6	9	6
Precious P	1	10	1
RAT 8209	4	11	4
Bubo	3	12	3
GVS 53416 Y	14	13	14
Romalinda	13	14	13

Sensory Ranking of Personal Watermelons- '07

*Flavor is more than
sweetness of sugar*

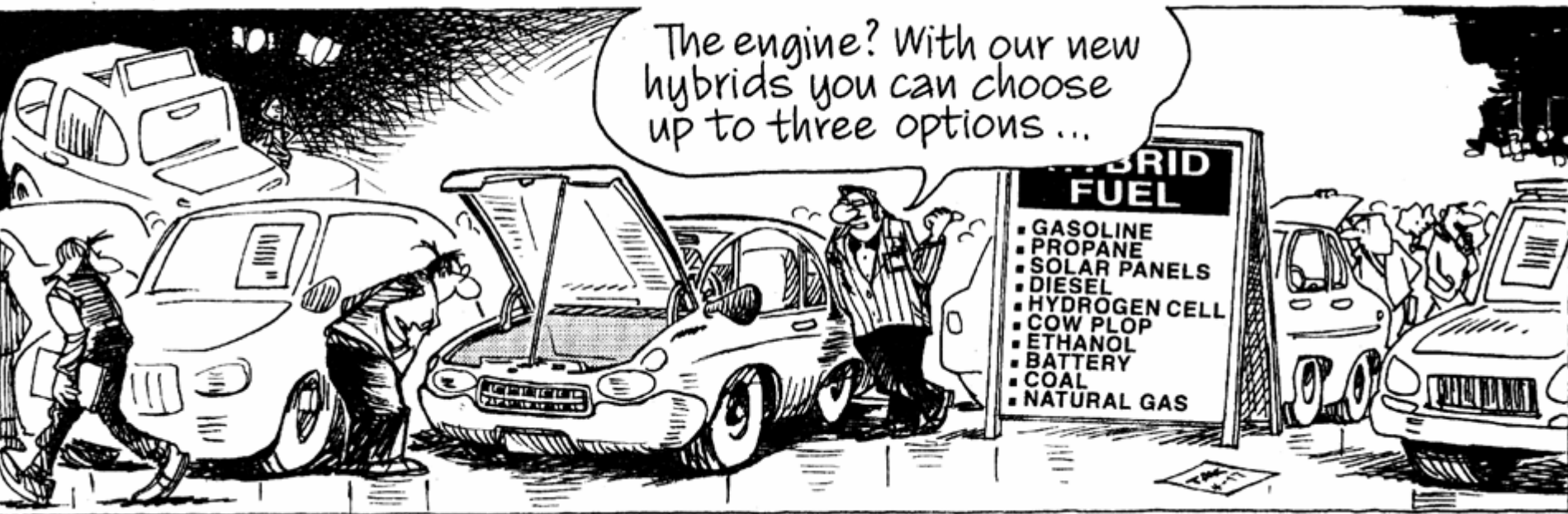
Providing True Alternatives

- Variety of produce/vegetables
- Variety of colors
- Variety of shapes
- Variety of sizes
- Variety of tastes
- Variety of health benefits

To accommodate every taste and need

Alternatives & Options

PC AND PIXEL | Thach Bui



Consumer Choices

- Consumer needs and wants will always change and evolve
- Consumers are aware and educated
- Consumers are concerned
- Consumers are demanding
- Consumers are understanding

*Consumers!
Keep in
mind and
support
those who
grow our
food and
fiber and
protect our
natural
resources.*



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