Pomegranate Production and Consumer Analysis

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Gulf Coast Research and Education Center



Outline

- Production Analysis
- Tasting Test
- Consumer Behavior



Designed Questionnaire

	UNIVERSITY of FLORIDA IFAS responses will be kept ANON General Information of P	Gu (Confidentia IVMOUS and	la Pomegr If Coast Researc Il - For Researc I CONFIDENT Orchard	ch and Extensi	on Purpose O	nly) ks.
Loc Size Est Nu Ty	ation of the orchard (county) e of the orchard (acre) ablishment time (month/year) mber of pomegranate trees vo major cultivars ree spacing (feet × feet) and rent if it were rented(\$/acr 2. Production Costs for t			archard 3 rd year	4 th year	5 th year
	2. Production Planting Costs Land Preparation (\$) Costs of purchasing trees (\$) Irrigation system (\$) Planting labor costs (\$) Other establishment costs (\$ Cultural Costs Fertilizer (\$)		2 ^{na} year			

OD & RESOURCE CONOMICS PARTMENT

- Purpose: collect production information and cost data to analyze economic feasibility
- Information Collected:
 - General information: orchard size, cultivar, planting density, # of trees, age of trees, etc.
 - Practices and costs: planting, irrigation, pruning, fertilization, and weed management



- Method: grower interview
- Visited orchards, ranging from newly established to mature orchards over-3-years



- Planting: Tree spacing:12 feet×18 feet
 - # of trees per acre: about 200
 - Trees (one-gallon pot):~\$8-\$15*
 - Trees (three-gallon pot): ~\$15-30
 - 4' wide pine mulch(about \$3/bag)



FOOD & RESOURCE

• Irrigation

- Drip emitter or micro sprinkler
- Frequency: 2-3times/week for ~1 hr, don't overly irrigate
- Micro sprinklers: \$800/acre
- Installment labor cost: \$400/acre.



- Fertilization
 - 82lb nitrogen, 300lb 8-6-8 fertilizer, and 224lb10-10-10 fertilizer for more-than-3-year trees
 - Foliar micronutrients applied monthly
 - Cost of fertilization: \$162/acre



- Pruning
 - Pruning frequency depends on:
 - Trained as bushes (less pruning)
 - Trained as single-trunk trees
 - For a more-than-3-years grove, regular pruning each year
 - 11 hours labor per acre in Summer
 - 32 hours labor per acre in Spring
 - 48 hours labor per acre in Winter
 - Total labor costs: about \$722



- Weed management
 - The weed-free zone is sprayed 2 to 3 times each year- March, June, and October
 - Herbicide rotation: Roundup[®], Poast[®] mixed with Surflan[®], Gramoxone[®] mixed with Fusillade[®] and Aim[®]
 - Estimated cost was \$146/acre



Price Information

• Pomegranate prices available at:

USDA-Agricultural Marketing Service

https://www.marketnews.usda.gov/mnp/fv-navbyCom?navClass=FRUITS&navType=byComm



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Experiment (Tasting Test)

- Phase I
 - October 10, 2014
 - # of subjects 119 (students, faculty, & staff at UF)
- Phase II
 - October 13, 2014
 - # of subjects 119 (students, faculty, & staff at UF)



Phases of Experiment & Pomegranates' Tested

Phase I

- Lester
- Afganski
- Wonderful
- Salavaski

Phase II

- Al Sirin-Nar
- Herbert
- Nikiski
- Jimmy



Attributes & Scaling

Appearance	1-9	Sweetness	1-9
Color	1-9	Seed hardness	1-5
Overall liking	1-9	Juiciness	1-5
Flavor	1-9	Sourness	1-5
Texture	1-9	Purchase Intent	1-5



Survey Questions

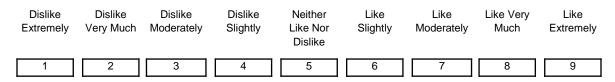
Please rate how much you like the *appearance* of sample 1.

Appearance

Dislike Extremely	Dislike Very Much	Dislike Moderately	Dislike Slightly	Neither Like Nor Dislike	Like Slightly	Like Moderately	Like Very Much	Like Extremely
1	2	3	4	5	6	7	8	9

Please rate how much you like the *color* of **sample 1**.

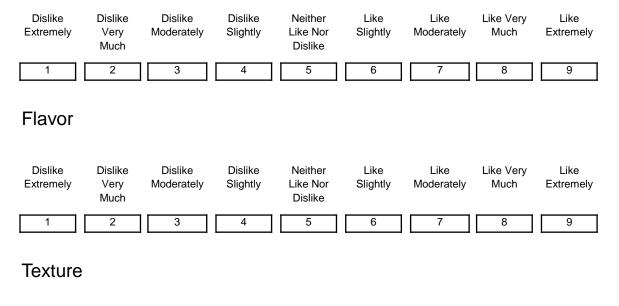
Color





Please indicate how much you like or dislike each attribute for sample 1.

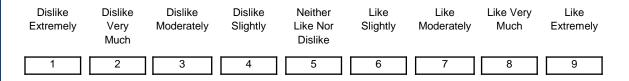
Overall Liking



Dislike Extremely	Dislike Very Much	Dislike Moderately	Dislike Slightly	Neither Like Nor Dislike	Like Slightly	Like Moderately	Like Very Much	Like Extremely
1	2	3	4	5	6	7	8	9



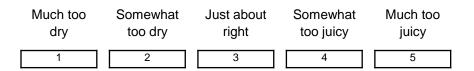
Sweetness



Seed Hardness



Juiciness



Sourness





If available in the store, how likely would you be to purchase sample 1?

- a) Definitely would not buy
- b) Probably would not buy
- c) Might or might not buy
- d) Probably would buy
- e) Definitely would buy

Please taste the samples in order from left to right again and rank them for OVERALL PREFERENCE, from most preferred to least preferred.

<u>Rank</u>	Sample #



Overall averages

	Appearance	Color	Flavor	Texture	Sweetness	Seed Hardness	Juiciness	Sourness	Overall Liking	Purchase Intent
Lester	4.35	4.00	5.57	6.01	5.78	3.51	2.64	2.22	5.53	2.42
Afganski	7.07	7.17	6.43	6.39	5.83	3.43	2.91	3.46	6.33	3.07
Wonderful	7.36	7.57	6.26	6.50	6.21	3.19	2.69	2.61	6.48	3.11
Salavaski	6.18	6.14	5.95	6.14	5.34	3.48	2.87	3.81	5.91	2.81
Al Sirin	6.79	6.81	6.38	6.25	6.18	3.60	2.92	3.09	6.35	3.17
Herbert	5.17	4.97	6.04	6.12	5.85	3.45	2.81	3.27	5.96	2.90
Nikitski	7.34	7.46	6.67	6.57	6.52	3.47	2.90	3.13	6.69	3.48
Jimmy	4.34	4.16	5.61	5.92	5.85	3.37	2.74	2.11	5.64	2.51

Rankings

	Appearance	Color	Flavor	Texture	Sweetness	Seed Hardness	Juiciness	Sourness	Overall Liking	Purchase Intent
Lester	7	8	8	7	7	7	8	7	8	8
Afganski	3	3	2	3	6	3	2	3	4	4
Wonderful	1	1	4	2	2	1	7	2	2	3
Salavaski	5	5	6	5	8	6	4	1	6	6
Al Sirin	4	4	3	4	3	8	1	6	3	2
Herbert	6	6	5	6	4	4	5	4	5	5
Nikitski	2	2	1	1	1	5	3	5	1	1
Jimmy	8	7	7	8	5	2	6 NIVERSITY	8	7 DEPARTM	7

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Rankings based on Purchase Intent

Ranking	Names	Averages (1-5)
1	Nikitsky	3.48
2	Al Sirin	3.17
3	Wonderful	3.11
4	Afganski	3.07
5	Herbert	2.9
6	Salavaski	2.81
7	Jimmy	2.51
8	Lester	2.42

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Online Survey

 Purpose of the survey was to identify consumers' preference/perception toward pomegranate

○ Fruit

 \circ Juice



Online Survey

• The survey included 2024 respondents.

- Important Survey Questions

Please indicate how often and in what amount you consume pomegranates?

	Fre		Qı	uantity (# d	of pieces o	f whole fru	uit)			
Daily	Weekly	Monthly	Less than monthly	1	2	3	4	5	6	7 or more



Cont...

Please indicate how often and in what amount you consume pomegranate juice? For example, if you normally drink one 8 oz. glass of juice per week, you will select "weekly" from the frequency column and "8 oz glass" from the quantity.

	F	Quantity (size of drink)							
Daily	Weekly	Monthly	Less than once/month	4 oz cup	8 oz glass	12 oz glass	16 oz bottle	32 oz bottle	59 oz carton



Cont...

Please indicate how important the following factors are when you purchase pomegranates?

	<u> </u>			-			
	Not at all Important	Very Unimportant	Somewhat Unimportant	Neither Important nor Unimportant	Somewhat Important	Very Important	Extremely Important
Seed							
Hardness							
Sourness							
Texture							
Juiciness							
Sweetness							
Overall flavor							
Appearance							
of fruit							
Color of the							
seed							
Please select							
'somewhat							
important' for							
this row.							
Thank you							
for reading							
carefully.							FOOD & RESOUR
							COD & RESOUR



Please indicate how much you agree or disagree with the following statements about pomegranates?

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	l don't know
They are high in antioxidants						
They are very nutritious						
A deep red seed/juice indicates ripeness						
A deep red seed/juice indicates sweetness						
They are good for you before or after exercising						
They improve immunity						
They lower the risk of heart disease						
They are good for your skin						
They are high in sugar						
They have no health benefits compared to other fruit						



Results

Which of the following fruit juices have you purchased

	In the last week	In the last month	In the last 3 months	In the last year	Very rarely or never buy
100% Pomegranate Juice	5%	11%	13%	7%	65%
Juice blend with pomegranate juice	6%	13%	13%	11%	58%
100% Grape Juice	13%	14%	16%	18%	39%
Juice blend with grapefruit juice	4%	9%	12%	8%	67%
100% Orange Juice	41%	11%	9%	23%	16%
Juice blend with orange juice	14%	13%	12%	17%	44%
100% Apple Juice	20%	15%	16%	18%	30%

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Which of the following fresh fruits have you purchased?

	In the last week	In the last month	In the last 3 months	In the last year	Very rarely or never buy
Pomegranate	4%	10%	18%	8%	60%
Grapes	32%	17%	19%	23%	9%
Strawberry	35%	12%	19%	23%	11%
Grapefruit	10%	12%	16%	11%	50%
Tangerine/mandarin/clemen tine	21%	15%	18%	22%	25%
Peach	10%	15%	40%	12%	23%
Banana	57%	9%	6%	21%	6%
Goji Berry	1%	2%	4%	1%	92%
Cactus Pears	1%	2%	4%	1%	92%
Starfruit (carambola)	1%	3%	7%	1%	88%

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Please indicate how often and in what amount you consume pomegranates?

	Frequency				
	Daily	Weekly	Monthly	Less than monthly	
Fruit	12%	31%	24%	33%	
Juice	55%	26%	11%	8%	



Have you ever bought pomegranates in the following forms?

Fresh Pomegranate	Seeds (Arils)	Salad	None
45%	10%	14%	31%



Compared to apples, how easy/difficult is it to find pomegranates in the location you typically shop for fresh fruit?

Much harder to find pomegranate	25%
A little harder to find pomegranate	34%
It is just as easy to find pomegranate as the other fruit(s)	19%
A little easier to find pomegranate	2%
Much easier to find pomegranate	2%
I never look for them	18%

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Please indicate how important the following factors are when you purchase pomegranates?

	Not at all Important	Very Unimportant	Somewhat Unimportant	Neither Important nor Unimportant	Somewhat Important	Very Important	Extremely Important
Seed							
Hardness	6%	2%	5%	11%	34%	23%	20%
Sourness	8%	3%	8%	13%	29%	24%	16%
Texture	3%	0%	2%	21%	18%	26%	30%
Juiciness	3%	0%	1%	29%	12%	20%	35%
Sweetne							
SS	3%	0%	1%	30%	11%	22%	34%
Overall							
flavor	2%	0%	0%	45%	9%	11%	32%
Appeara							
nce of	20/	00/	10/	220/	110/	100/	250/
fruit	3%	0%	1%	33%	11%	18%	35%
Color of	5%	2%	3%	23%	210/	1 9 %	20%
the seed	570	۷70	570	Z370	21% UF I	FAS	28% FOOD & RESOURCE ECONOMICS

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Please select biggest reason you do not purchase fresh pomegranate?

There are not enough varieties to choose from in my local store	2%
When I have purchased them in the past, they have been bad inside	2%
Compared to other fruits (such as apples, oranges, bananas etc) they are more expensive	12%
They are too sweet	0%
I prefer pomegranate juice rather than eating the whole fruit	8%
It is time consuming to prepare the fruit	9%
I have never tried it before	21%
I do not like the flavor	11%
It is just not part of my habit/tradition to eat these	18%
I don't know how to pick a good one out	10%
It's not the right season	2%
Other	5%

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Thank You! guanz@ufl.edu

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