

Pomegranate Production and Consumer Analysis

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Gulf Coast Research and Education Center

Outline

- Production Analysis
- Tasting Test
- Consumer Behavior

Production Costs and Practices

- Designed Questionnaire

UF UNIVERSITY of FLORIDA IFAS

Florida Pomegranate Cost Survey
Gulf Coast Research and Education Center
(Confidential - For Research and Extension Purpose Only)

Your responses will be kept ANONYMOUS and CONFIDENTIAL. Please fill in the blanks.

1. General Information of Pomegranate Orchard

	Values
Location of the orchard (county)	
Size of the orchard (acre)	
Establishment time (month/year)	
Number of pomegranate trees	
Two major cultivars	
Tree spacing (feet × feet)	
Land rent if it were rented(\$/acre)	

2. Production Costs for the Whole Pomegranate Orchard

	1 st year	2 nd year	3 rd year	4 th year	5 th year
Planting Costs					
Land Preparation (\$)					
Costs of purchasing trees (\$)					
Irrigation system (\$)					
Planting labor costs (\$)					
Other establishment costs (\$)					
Cultural Costs					
Fertilizer (\$)					

Production Costs and Practices

- 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

Production Costs and Practices

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

Production Costs and Practices

- 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)



Production Costs and Practices

- 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.



Production Costs and Practices

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

Production Costs and Practices

- 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

Production Costs and Practices

- 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-nav-byCom?navClass=FRUITS&navType=byComm>

Outline

- Production Analysis
- Consumer Tasting Test
- Consumer Behavior

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

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 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

Flavor

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

Texture

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

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

Seed Hardness

Much too soft	Somewhat too soft	Just about right	Somewhat too hard	Much too hard
1	2	3	4	5

Juiciness

Much too dry	Somewhat too dry	Just about right	Somewhat too juicy	Much too juicy
1	2	3	4	5

Sourness

Not at all sour enough	Not quite sour enough	Just about right	Somewhat too sour	Much too sour
1	2	3	4	5

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>	<u>Sample #</u>
_____	_____
_____	_____
_____	_____
_____	_____

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	8	7	7

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

Outline

- Production Analysis
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Online Survey

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

Online Survey

- The survey included 2024 respondents.
 - Important Survey Questions

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

Frequency				Quantity (# of pieces of whole fruit)						
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.

Frequency				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?

	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.							

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

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	I 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%

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/clementine	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%

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%

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%
Sweetness	3%	0%	1%	30%	11%	22%	34%
Overall flavor	2%	0%	0%	45%	9%	11%	32%
Appearance of fruit	3%	0%	1%	33%	11%	18%	35%
Color of the seed	5%	2%	3%	23%	21%	18%	28%

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%

Thank You!

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