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Innovation in organic rose petals jam production

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8th CASEE Conference – Warszawa 14-16th of May 2017

Introduction

Roses are well known as a symbol of love and victory, sign of nobility and refinement.

Rose is a shrub of the *Rosa* genus .

Decorative role – parks, gardens, towns; **protection role** – living fences; **food industry** – jam, sherbet, syrup, creams for cakes, vinegar, marmelade, wine;

cosmetics – rose oil, rose water. soap, beauty cream etc;
medicine – rose tea and soak (specially *Rosa damascena*. *R.gallica*) used in treatment of oral mucosal disorders, flu, anemia.
From rose petals we can extract active principles that can replace the usual conditioners from food and cosmetics ("E").



Introduction

Roses have many qualities and therapeutic properties:

- source of vitamin C,
- antidepressant,
- antibacterial,
- antispasmodic,
- antiviral,
- aphrodisiac,
- astringent,
- bactericidal,
- depurative,
- nervous system sedative,
- tonic for the heart, liver, stomach and uterus



Rose de Resht

Roses for food industry: fragrance, texture of petals.

Objective

to present some original data regarding the sensorial analysis and the customers perceptions on innovative jams obtained from organic roses.



Material and method

Three climbing varieties David Austin English roses



Falstaff



Brother Cadfael

- **“Falstaff”** - dark crimson colour, 250-300 cm height, repeat flowering and good fragrance.
- **“Crown Margaret”** - an apricot – orange, 250-350 cm height, fruity fragrance with repeat flowering.
- **“Brother Cadfael”** - a pink rose, 300 cm height, strong old rose fragrance with repeat flowering.

All three varieties are edible. suitable for jam or other products.



**Crown Princess
Margaret**

<http://www.petrovicroses.rs/en/roses/english-roses>

1. Soil preparation



Increase the soil fertility and biological activity

Ameliorative plants



Sinapis alba L.



Phacelia tanacetifolia L.



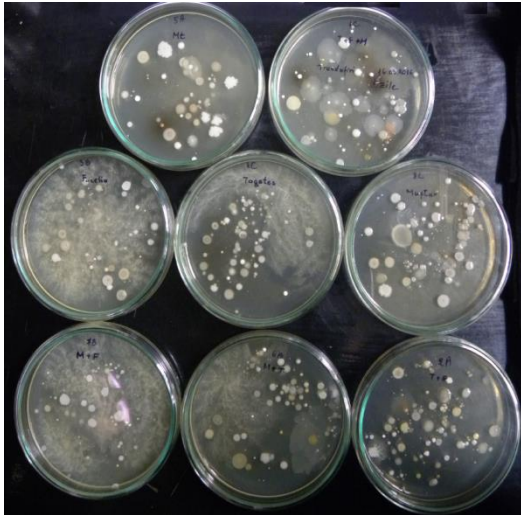
Tagetes patula L. Sparky Mix

Ameliorative plants



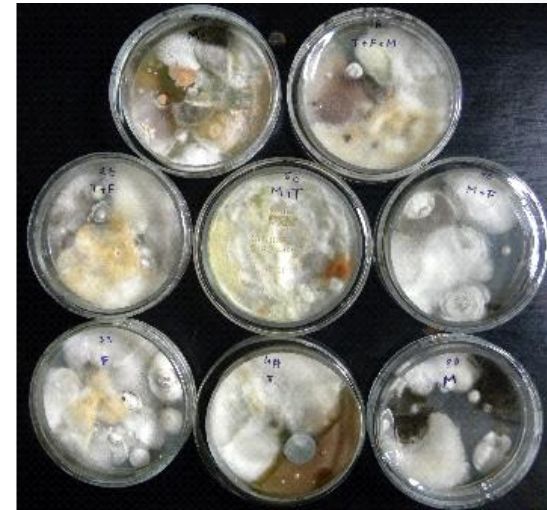
Sinapis
Phacelia
Tagetes

Soil microbiological analyzes



Bacterial microflora

Soil respiration



Fungi microflora

Agrochemical analyzes

- ❖ Humus content
- ❖ N. P. K
- ❖ pH

2. Organic rose culture



- ❖ 2 m between rows and 1 m on the row
- ❖ Trellis for rose plant support with three wires fixed on 2.5 m high Acacia wooden posts

Drip irrigation



On the row - mulch with wood chips and wool



Wool

Wood chips





- ❖ Fertilization: - with manure and organic products;
- ❖ Plant protection: - with different products based on copper. sodium bicarbonate. sulfur. hot pepper and propolis tincture;
- ❖ Increasing the plants immunity system: - bio stimulators and caw milk



Rose petals jam



- ❖ 17 rose petals jam variants:
 - Sugar and honey
 - Additives: lemon. ginger. seabuckthorn. hot pepper

Variants for rose petals jam

Variant	Explanation
V1	Crown +seabuckthorn
V2	Crown+ginger
V3	Crown+lemon
V4	Brother+seabuckthorn
V5	Falstaff+seabuckthorn
V6	Falstaff+seabuckthorn+lemon
V7	Brother+seabuckthorn+lemon
V8	Crown +seabuckthorn+lemon
V9	Brother+hot pepper
V10	Falstaff + hot pepper
V11	Crown + hot pepper
V13	Brother + ginger 50 gr
V14	Falstaff + ginger 40-50 gr
V15	Crown + ginger 40-50 gr
V16	Falstaff finely cut+ginger 50 gr
V17	Crown finely cut + ginger 50 gr

Tasting

- ❖ All the 17 jam variants were tasted by different consumers by gender. age
- ❖ Appearance. perfume. general taste. overall impresion.



Tasting



Results and discussion



Total soluble solids and Total dry substance -extract

Explanation	Variant	Total soluble solids (%Brix)	Total dry substance
Crown +seabuckthurn	V1	72,00%	22,35%
Crown+lemon	V3	69,90%	23,14%
Brother+seabuckthorn	V4	70,70%	22,50%
Falstaff+seabuckthorn	V5	68,80%	25,59%
Falstaff+seabuckthorn+lemon	V6	64,20%	29,05%
Brother+seabuckthorn+lemon	V7	67,10%	27,83%
Brother+hot pepper	V9	66,70%	24,74%
Falstaff + hot pepper	V10	68,30%	27,32%
Crown + hot pepper	V11	65,60%	26,12%
Brother + ginger 50 gr	V13	70,50%	23,15%
Falstaff + ginger 40-50 gr	V14	66,80%	26,79%
Crown finely cut + ginger 50 gr	V17	70,60%	19,83%

Result and discussion

Age	Code	Persons
under 14	a	34%
15-25	b	31%
26-35	c	10%
36-45	d	13%
46-55	e	8%
56-65	f	3%
over 66	g	1%

Target group:

- **General public**
- **„Researchers night” event**

Gender	Code	Persons
Female	F	73%
Male	M	27%



Rose petals jam

- ❖ with lemon
- ❖ with seabuckthorn
- ❖ with ginger
- ❖ with hot pepper



The product has multiple qualities given of the new composition.



Results and discussion

Product	Variant	Aspect 1-5	Perfume 1-5	General taste 1-5	Overall impression 1-5	T.S.S. (%Brix)
Crown +seabuckthorn	V1	4.09	3.91	4.27	3.82	72,00%
Crown+ginger	V2	3.79	3.43	4.29	3.64	-
Crown+lemon	V3	4.40	4.00	4.60	4.27	69,90%
Brother+seabuckthorn	V4	4.44	4.67	4.89	4.56	70,70%
Falstaff+seabuckthorn	V5	4.23	4.15	4.46	3.69	68,80%
Falstaff+seabuckthorn+lemon	V6	4.36	3.36	4.43	4.57	64,20%
Brother+seabuckthorn+lemon	V7	4.29	4.24	4.57	4.19	67,10%
Crown +seabuckthorn+lemon	V8	3.83	3.67	3.75	3.17	
Brother+hot pepper	V9	3.73	3.91	4.55	3.55	66,70%
Falstaff + hot pepper	V10	4.33	4.20	3.80	3.93	68,30%
Crown + hot pepper	V11	4.13	4.47	4.67	4.27	65,60%
Brother + ginger 50 gr	V13	3.96	3.83	4.46	4.04	70,50%
Falstaff + ginger 40-50 gr	V14	3.93	4.13	3.73	2.67	66,80%
Crown + ginger 40-50 gr	V15	3.81	4.06	4.06	3.63	-
Falstaff finely cut+ginger 50 gr	V16	4.37	4.11	4.26	3.74	-
Crown finely cut + ginger 50 gr	V17	4.00	4.00	4.24	3.67	70,60%

Target group per variant

Explanation	Variant	Gender	Age	Aspect 1-5	Perfume 1-5	General taste 1-5	Ov.impressi on 1-5
Crown + seabuckthorn	V1	F	.26-35	5,00	4,00	5,00	5,00
Crown+ginger	V2	F	.56-65	5,00	4,00	5,00	4,00
Crown+lemon	V3	M	.under 14	5,00	4,00	5,00	5,00
Crown+lemon	V3	F	.26-35	5,00	5,00	5,00	5,00
Brother+seabuckthorn	V4	M	.under 14	5,00	5,00	5,00	5,00
Brother+seabuckthorn	V4	F	.15-25	5,00	5,00	5,00	5,00
Brother+seabuckthorn	V4	M	.15-25	5,00	5,00	5,00	5,00
Brother+seabuckthorn	V4	F	.26-35	5,00	5,00	5,00	5,00
Brother+seabuckthorn	V4	F	.36-45	4,00	4,00	5,00	5,00
Falstaff+seabuckthorn	V5	-					
Falstaff+seabuckthorn+lemon	V6	M	.26-35	5,00	4,00	5,00	5,00
Brother+seabuckthorn+lemon	V7	F	.26-35	5,00	5,00	5,00	5,00
Brother+seabuckthorn+lemon	V7	M	.26-35	5,00	5,00	5,00	5,00
Brother+seabuckthorn+lemon	V7	F	.36-45	4,00	4,00	5,00	5,00
Brother+seabuckthorn+lemon	V7	F	.46-55	4,50	5,00	5,00	5,00

Target group per variant

Explanation	Variant	Gender	Age	Aspect 1-5	Perfume 1-5	General taste 1-5	Ov. impression 1-5
Crown +seabuckthorn+lemon	V8	F	.under 14	4,50	4,50	4,75	4,75
Brother+hot pepper	V9	M	.15-25	5,00	4,00	4,00	5,00
Brother+hot pepper	V9	M	.26-35	4,00	4,00	4,00	5,00
Falstaff + hot pepper	V10	F	.46-55	5,00	5,00	5,00	5,00
Crown + hot pepper	V11	F	.26-35	5,00	5,00	5,00	5,00
Crown + hot pepper	V11	F	.36-45	4,00	4,00	4,50	5,00
Brother + ginger 50 gr	V13	M	.36-45	5,00	5,00	5,00	4,00
Falstaff + ginger 40-50 gr	V14	M	.56-65	5,00	5,00	5,00	5,00
Crown + ginger 40-50 gr	V15	M	.over 66	5,00	5,00	5,00	5,00
Falstaff finely cut+ginger 50 gr	V16	M	.15-25	5,00	5,00	5,00	5,00
Falstaff finely cut+ginger 50 gr	V16	M	.46-55	5,00	4,00	5,00	5,00
Crown finely cut + ginger 50 gr	V17	F	.26-35	5,00	5,00	5,00	5,00

Distribution by age

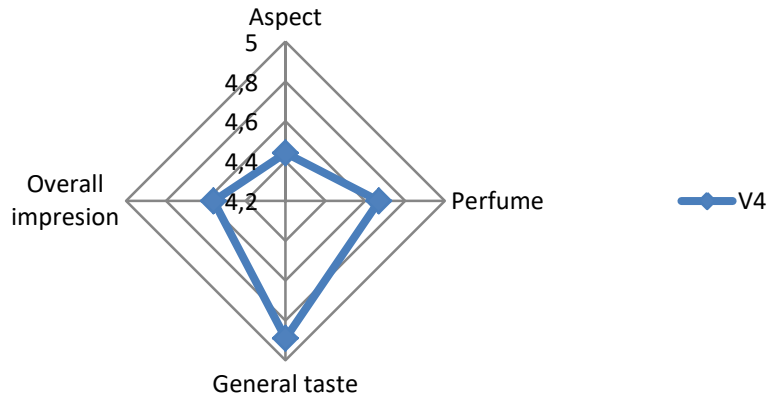
Age	G.	Var.	Explanation	Aspect 1-5	Perfume 1-5	General taste 1-5	Overall impression 1-5
.under 14	F	V3	Crown+lemon	4,75	4,75	5,00	4,50
.under 14	M	V3	Crown+lemon	5,00	4,00	5,00	5,00
.under 14	F	V8	Crown +seabuckthorn+lemon	4,5	4,5	4,75	4,75
.under 14	M	V4	Brother+seabuckthorn	5,00	5,00	5,00	5,00
.15-25	F	V4	Brother+seabuckthorn	5,00	5,00	5,00	5,00
.15-25	M	V4	Brother+seabuckthorn	5,00	5,00	5,00	5,00
.15-25	F	V16	Falstaff finely cut+ginger 50 gr	4,50	5,00	5,00	4,50
.15-25	M	V16	Falstaff finely cut+ginger 50 gr	5,00	5,00	5,00	5,00
.26-35	F	V1	Crown +seabuckthorn	5,00	4,00	5,00	5,00
.26-35	F	V3	Crown+lemon	5,00	5,00	5,00	5,00
.26-35	F	V4	Brother+seabuckthorn	5,00	5,00	5,00	5,00
.26-35	F	V7	Brother+seabuckthorn+lemon	5,00	5,00	5,00	5,00
.26-35	M	V7	Brother+seabuckthorn+lemon	5,00	5,00	5,00	5,00
.26-35	F	V11	Crown + hot pepper	5,00	5,00	5,00	5,00
.26-35	F	V17	Crown finely cut + ginger 50 gr	5,00	5,00	5,00	5,00
.26-35	M	V6	Falstaff+seabuckthorn+lemon	5,00	4,00	5,00	5,00
.26-35	M	V16	Falstaff finely cut+ginger 50 gr	4,50	4,50	5,00	5,00

Distribution by age

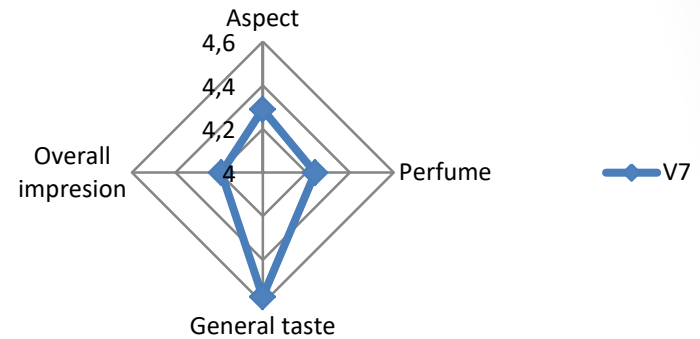
Age	G.	V.	Explanation	Aspect 1-5	Perfume 1-5	General taste 1-5	Overall impression 1-5
.36-45	F	V4	Brother+seabuckthorn	4,00	4,00	5,00	5,00
.36-45	M	V4	Brother+seabuckthorn	4,00	5,00	5,00	4,00
.36-45	F	V7	Brother+seabuckthorn+lemon	4,00	4,00	5,00	5,00
.36-45	M	V7	Brother+seabuckthorn+lemon	4,00	4,00	5,00	4,00
.36-45	F	V11	Crown + hot pepper	4,00	4,00	4,50	5,00
.36-45	F	V16	Falstaff finely cut+ginger 50 gr	5,00	5,00	5,00	4,00
.36-45	M	V13	Brother + ginger 50 gr	5,00	5,00	5,00	4,00
.46-55	F	V7	Brother+seabuckthorn+lemon	4,50	5,00	5,00	5,00
.46-55	F	V10	Falstaff + hot pepper	5,00	5,00	5,00	5,00
.46-55	M	V16	Falstaff finely cut+ginger 50 gr	5,00	4,00	5,00	5,00
.56-65	F	V2	Crown+ginger	5,00	4,00	5,00	4,00
.56-65	F	V7	Brother+seabuckthorn+lemon	5,00	4,00	4,00	4,00
.56-65	M	V14	Falstaff + ginger 40-50 gr	5,00	5,00	5,00	5,00
.over 66	F	V17	Crown finely cut + ginger 50 gr	5,00	4,00	4,00	3,00
.over 66	M	V15	Crown + ginger 40-50 gr	5,00	5,00	5,00	5,00

Some variants to be recommended

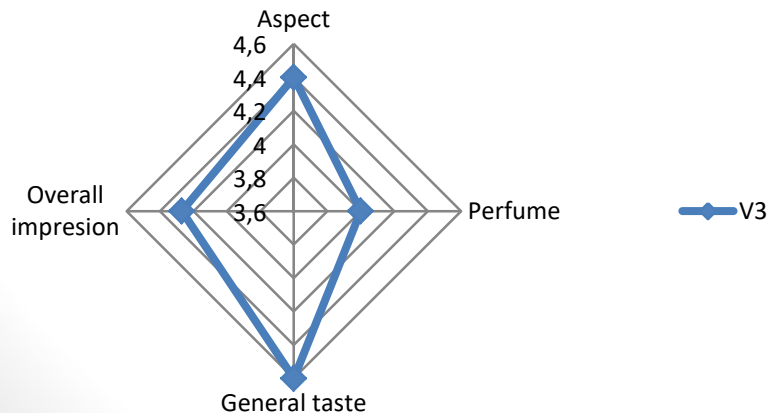
V4 - Brother+seabuckthorn



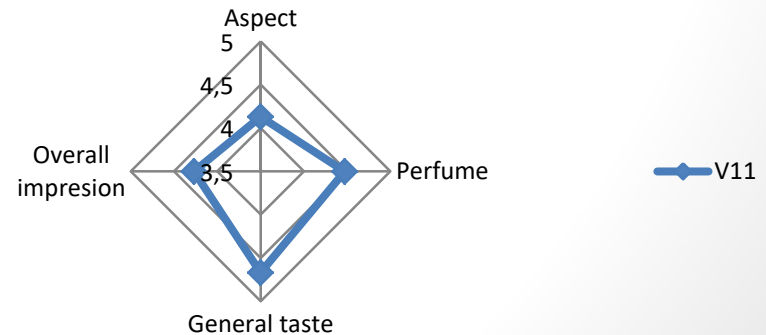
V7 - Brother+seabuckthorn+lemon



V3 - Crown+lemon



V11 - Crown + hot pepper



Conclusion

- **Variant 4 - Brother+seabuckthorn** – the most appreciated
- **.26-35** and **.36-45** aged persons highly appreciated more than 3 variants of rose petals jams
- **To be recommended for production:**
 - ✓ V 4 - Brother+seabuckthorn
 - ✓ V7 - Brother+seabuckthorn+lemon
 - ✓ V16 - Falstaff finely cut + ginger 50 gr
 - ✓ V3 - Crown+lemon
 - ✓ V11 - Crown + hot pepper

Thank you for your attention!
Questions?

