



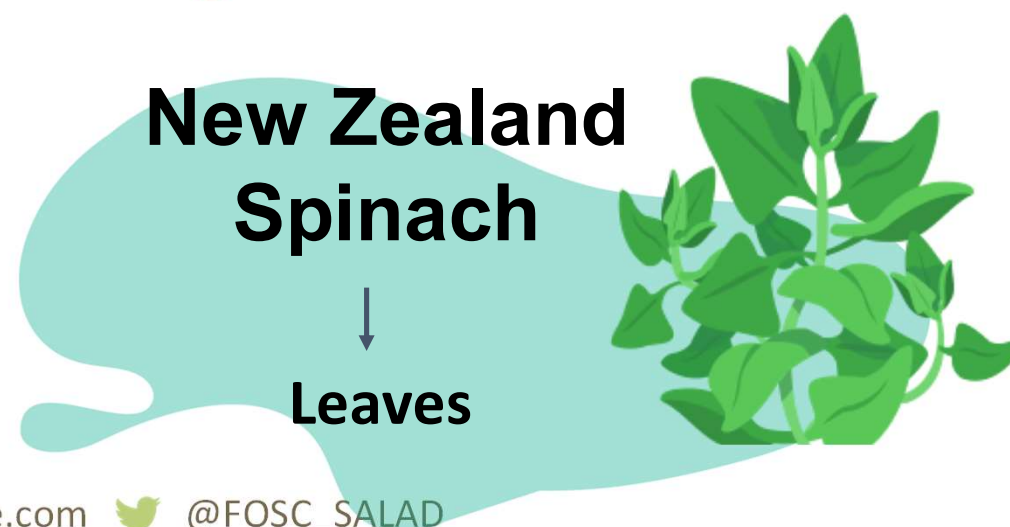
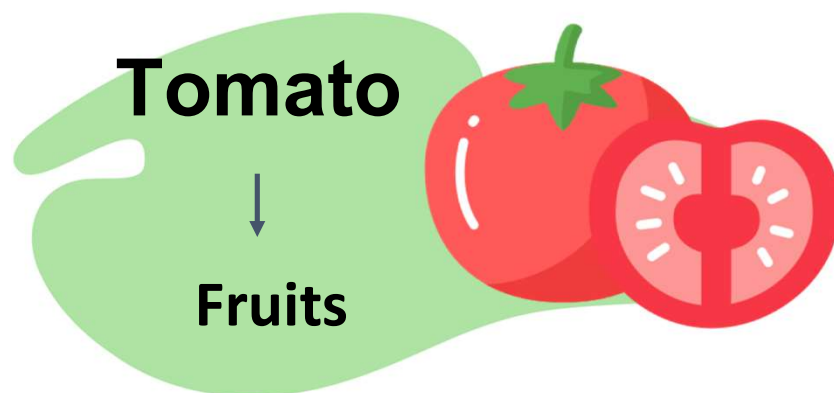
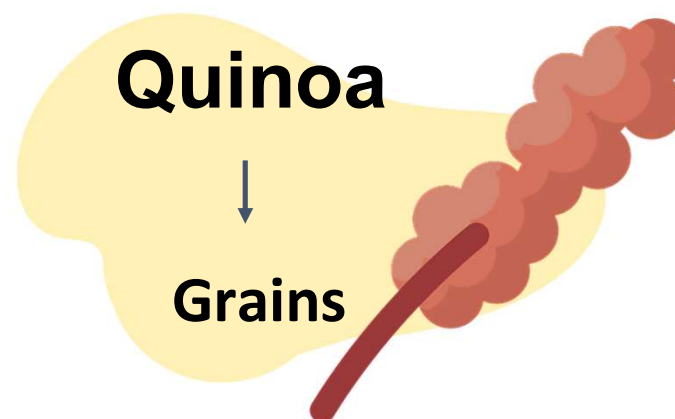
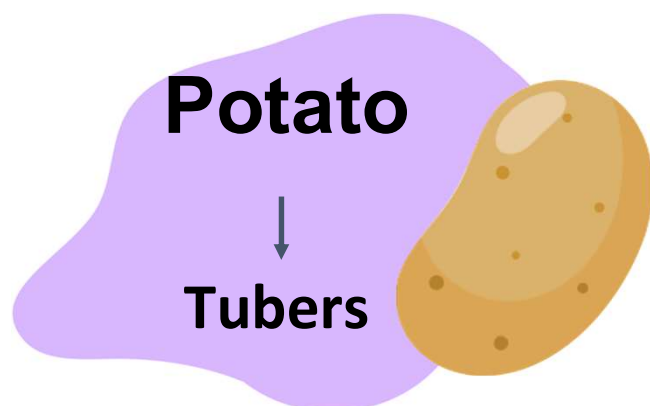
SALAD
Saline AgricuLture for ADaptation

Nutritional characteristics and taste of saline farming crops

Giulia Mozzo and Abdelaziz Hirich

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Edible part:





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Nutritional characteristics and taste of: **New Zealand Spinach**

Tetragonia tetragonioides Pallas Kuntz



UNIVERSITÀ
DEGLI STUDI
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DAGRI
DIPARTIMENTO DI SCIENZE
E TECNOLOGIE AGRARIE,
ALIMENTARI, AMBIENTALI E FORESTALI



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Edible part:
leaves



**Nutritional
characteristics**



Edible part:
leaves

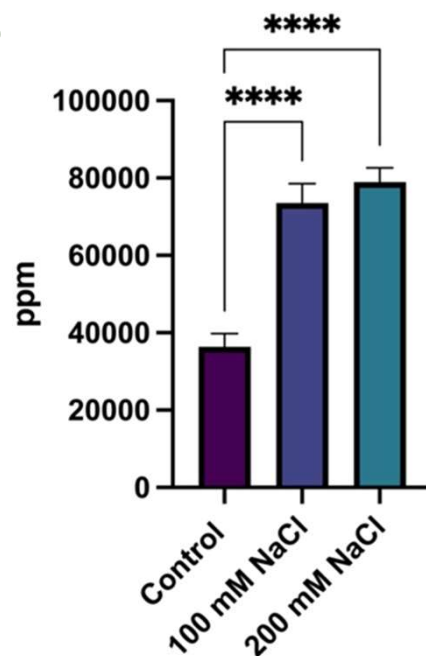


**Nutritional
characteristics**

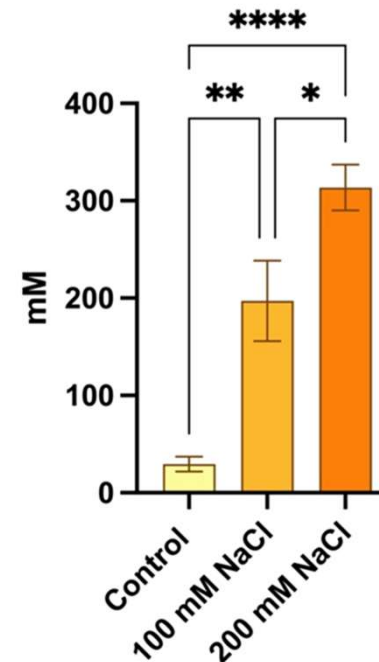


ions

Sodium



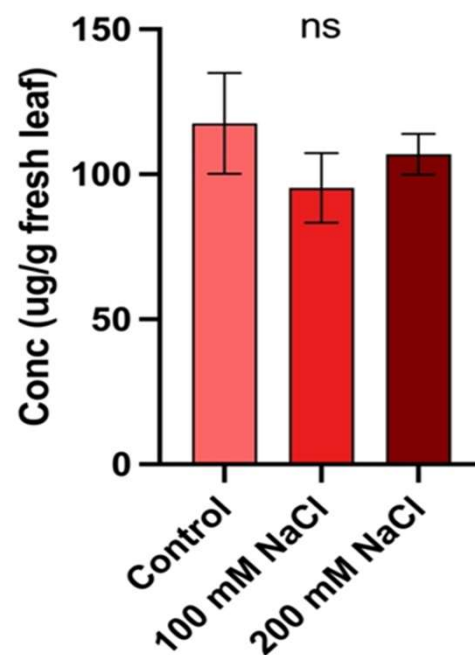
Chloride



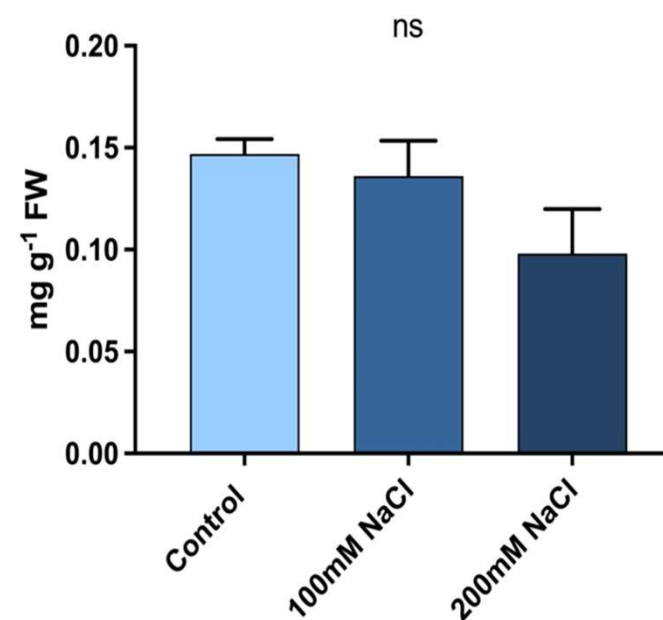
Cu (ppm)	Fe (ppm)	Mg (ppm)	Mn (ppm)	Mo (ppm)	Ni (ppm)	P (ppm)	Sr (ppm)	Zn (ppm)
15,42 ± 1,29	331,82 ± 219,77	8327,49 ± 1465,73	146,83 ± 43,77	0,6 ± 0,43	2,25 ± 0,47	1582,95 ± 748,79	30,7 ± 15,92	57,55 ± 48,45
18,16 ± 5,77	561,52 ± 700,17	6492,11 ± 1837,81	158,08 ± 26,94	0,76 ± 0,59	3,34 ± 2,40	2234,1 ± 955,37	53,27 ± 34,33	65,49 ± 42,38
21,47 ± 7,81	948,76 ± 873,58	6563,87 ± 1277,10	215,37 ± 65,53	0,45 ± 0,23	4,47 ± 2,94	2136,46 ± 443,08	57,58 ± 22,36	64,19 ± 38,63

Pigments and Proteins

Carotenoids



Proteins

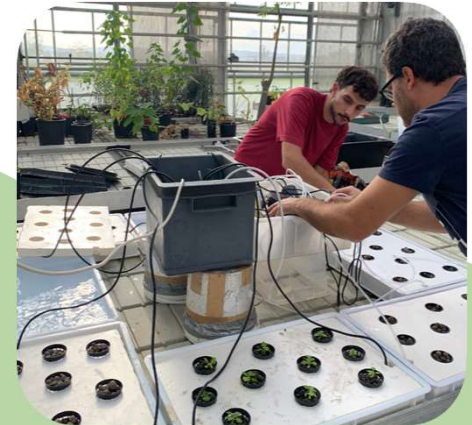




Taste test



Plant growth and harvest



Cooking method



- **Frozen** leaves were **steamed**
- Cooking time was set to **5 minutes**
- **15 g** per person
- **0.75 g** of extra virgin olive oil
- **glass of water** at room temperature.



The sample:

Participants = 125

Age range = 18 - 80 y

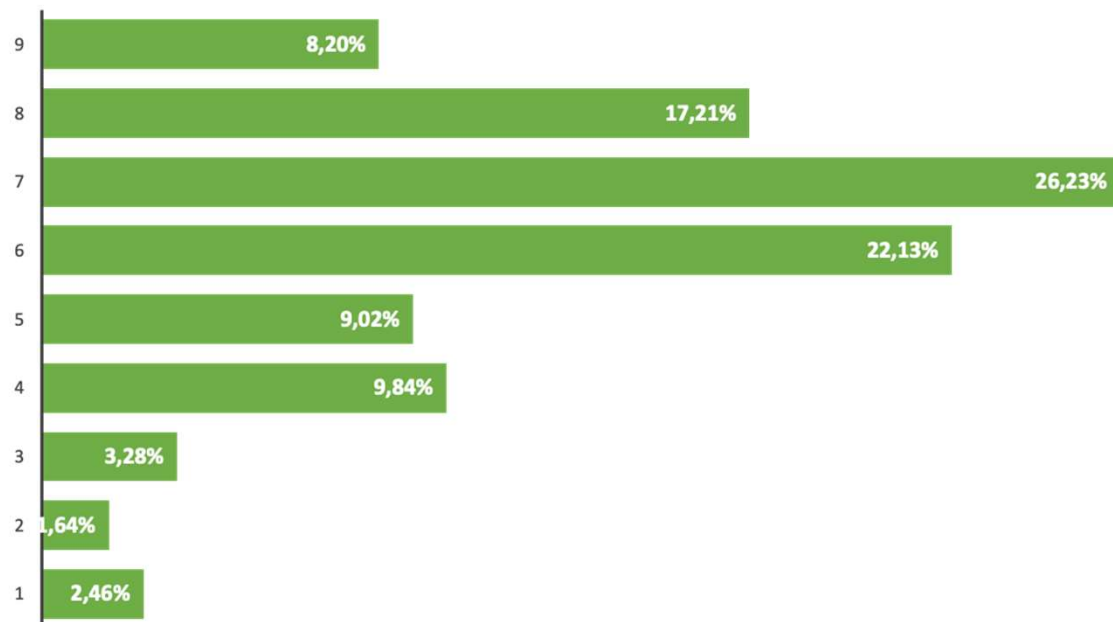
Sex = 56% Female
44% Male

Nr nationality = 20

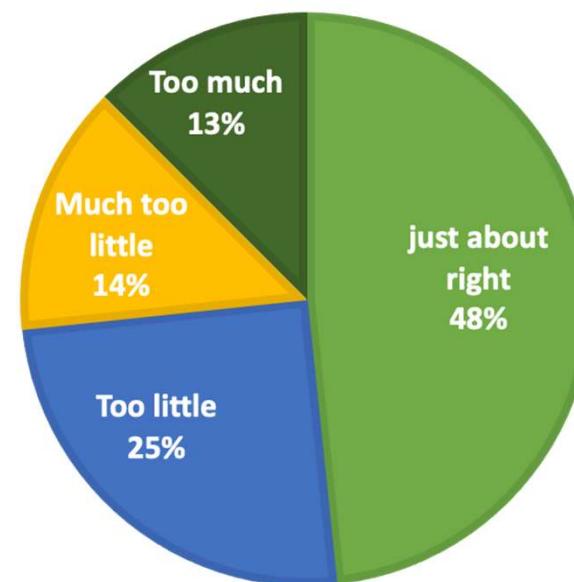


Results:

DO YOU LIKE THE SAMPLE YOU TASTED?



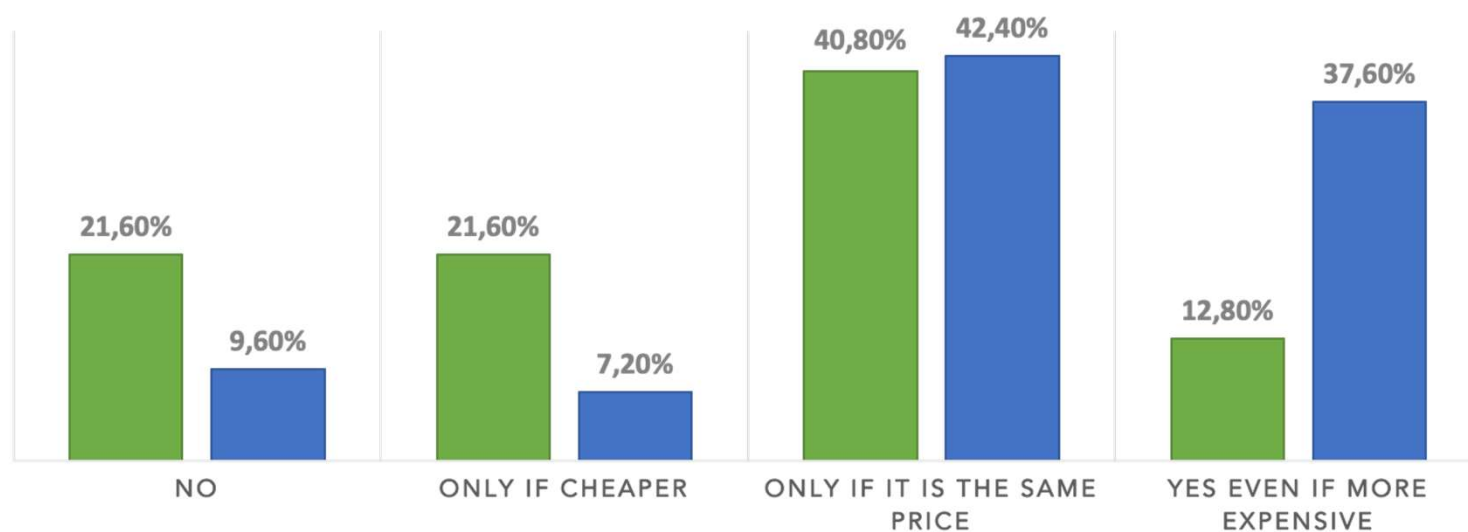
HOW SALTY IS IT?





WOULD YOU PREFER TETRAGONIA?

■ over other dark greens?
 ■ over other dark greens if more sustainable?



Thank you!



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862555

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KU LEUVEN





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Nutritional aspects and taste of quinoa-based product in Morocco

By: Pr. Abdelaziz Hirich, UM6P, ASARI, Morocco



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Why quinoa ?

PROTEIN CONTENT (%)

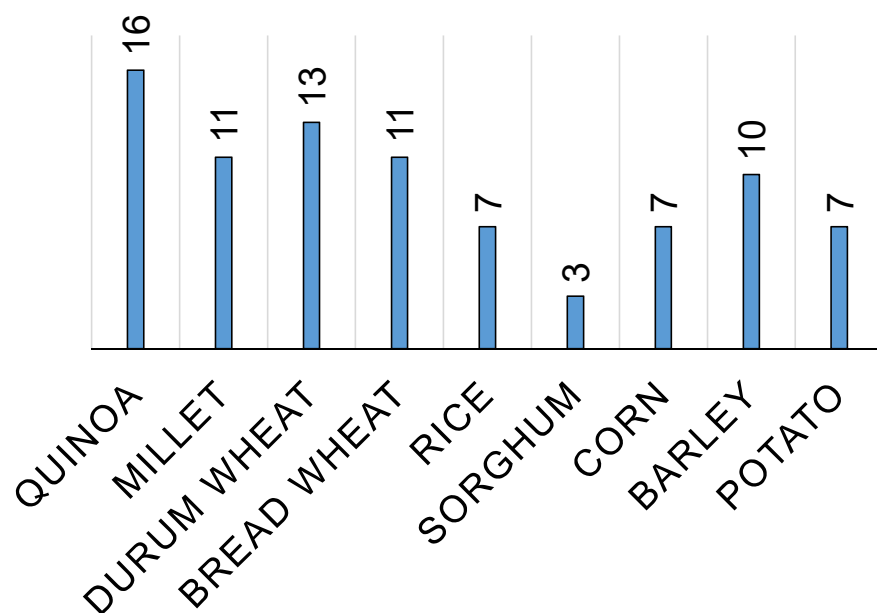


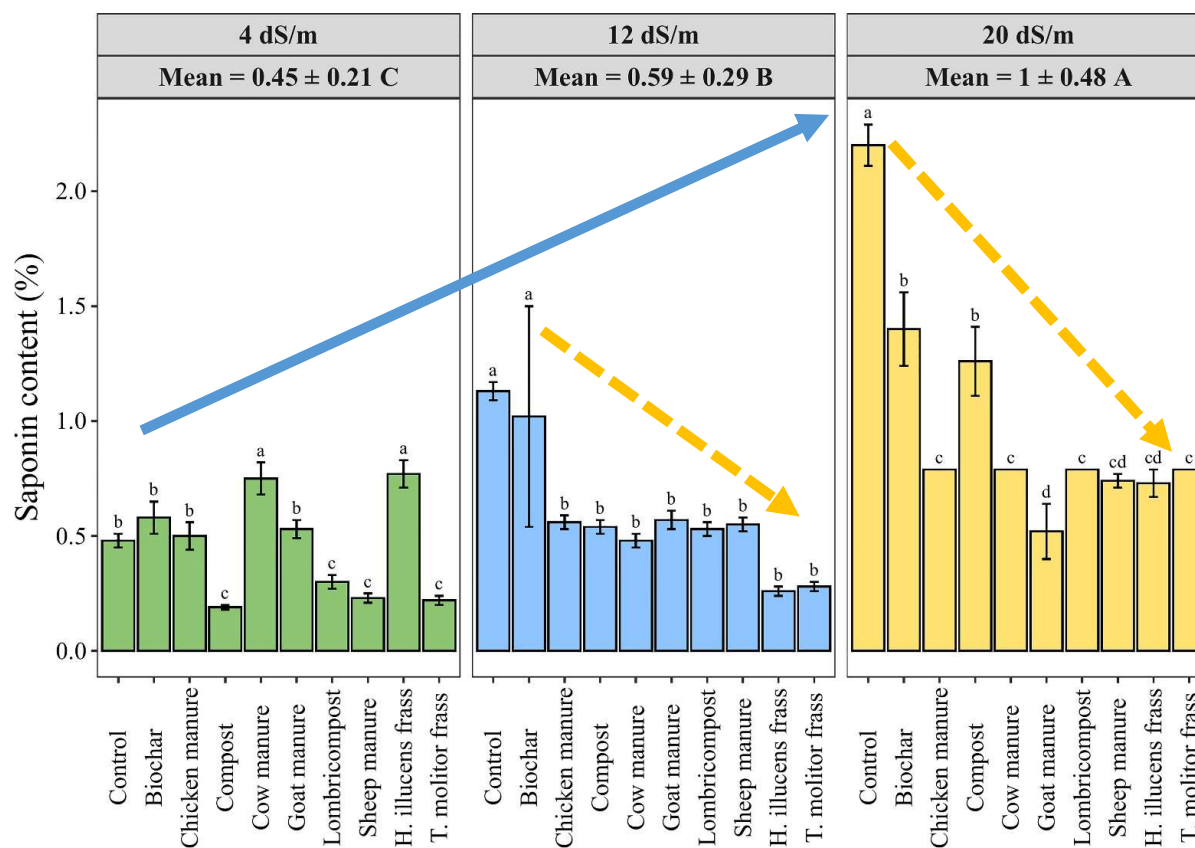
Table 3: Mineral content of quinoa and selected foods, mg/100g dry weight

	Quinoa	Maize	Rice	Wheat
Calcium	148.7	17.1	6.9	50.3
Iron	13.2	2.1	0.7	3.8
Magnesium	249.6	137.1	73.5	169.4
Phosphorus	383.7	292.6	137.8	467.7
Potassium	926.7	377.1	118.3	578.3
Zinc	4.4	2.9	0.6	4.7

Source: Koziol (1992)

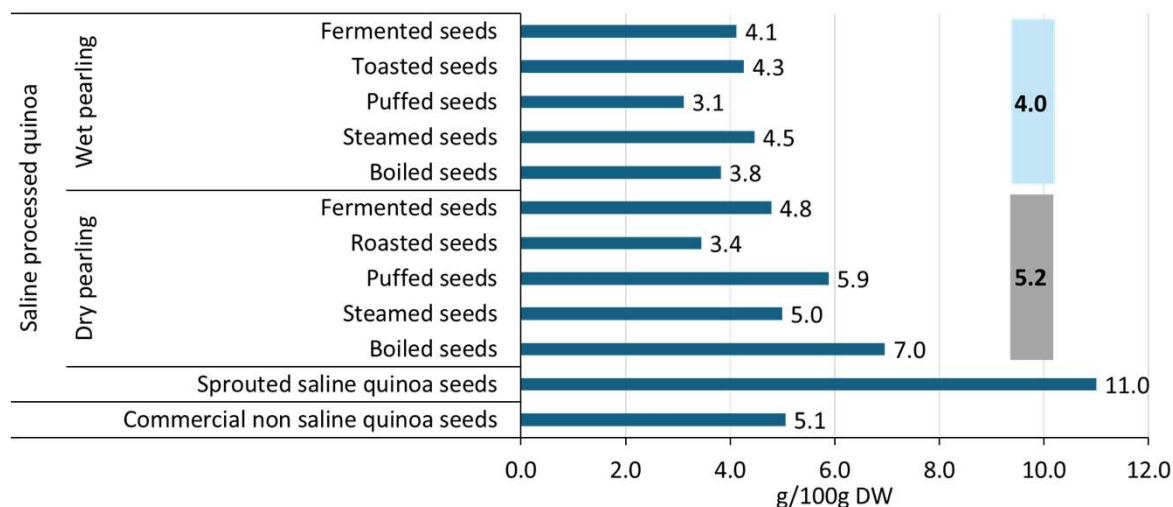
Organic amendments & seed quality under saline conditions

Saponin content of quinoa seed increased by salinity but reduced by organic amendments



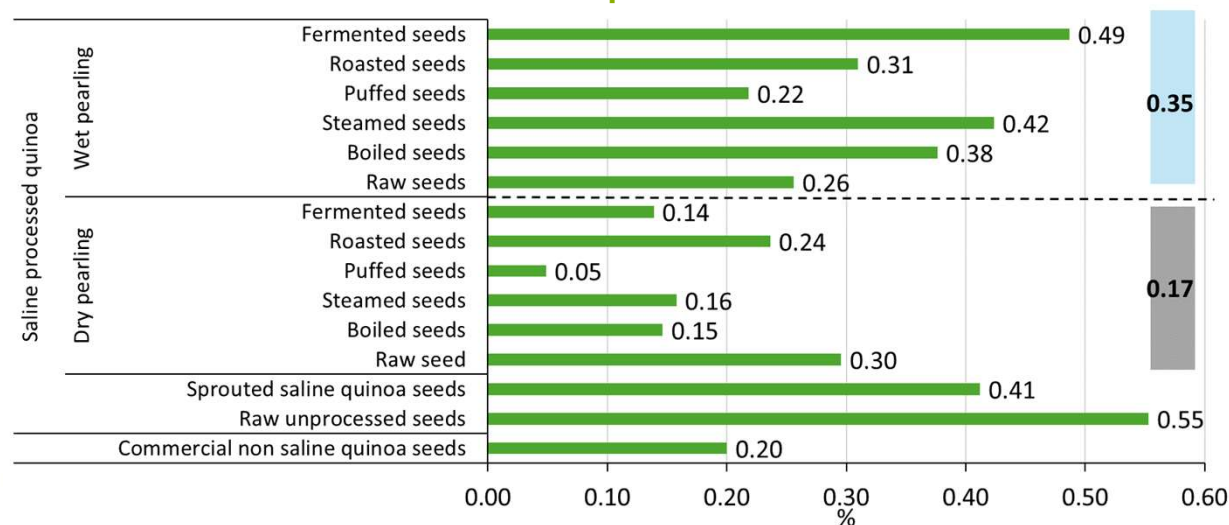
Processing pathways effect on quinoa nutritional value

Essential amino acids



Dry pearling of quinoa seeds preserved essential amino-acid content and reduced significantly saponin (*by 70% in average compared to 35% for wet pearling*)

Saponin content



Sensory analysis of tasted quinoa-based products in Morocco

Tasted products

A tasting panel was organised in collaboration with Al Ayafa women cooperative and Gardenia restaurant in Laayoune for two days (18-19 Mars 2023). The women cooperative prepared several quinoa-based recipes including:

- Quinoa bread (25% quinoa)
- Quinoa salad (quinoa, maize, tomato, sweet pepper, coriander, parsley, lettuce)
- 50% corn-50% quinoa couscous
- 100% quinoa couscous
- Chebakia (Moroccan Ramadan sweet)



Quinoa salad



Quinoa couscous



Quinoa Chebakia

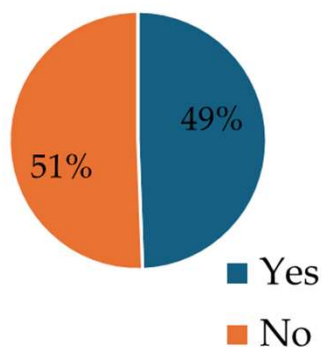


Quinoa bread

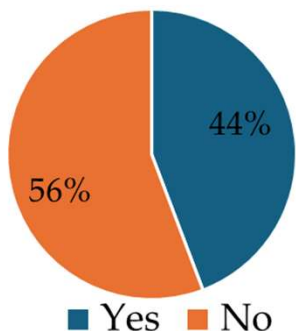
Sensory analysis of tasted quinoa-based products in Morocco

General Perception towards quinoa

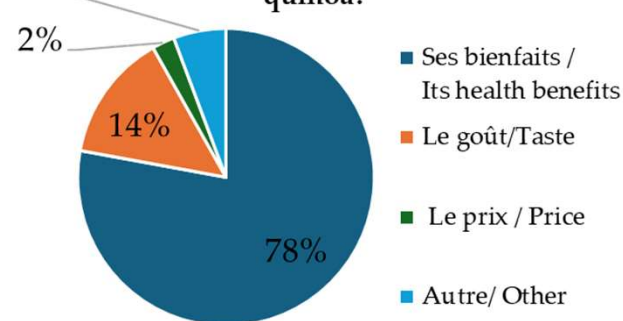
Do you know quinoa?



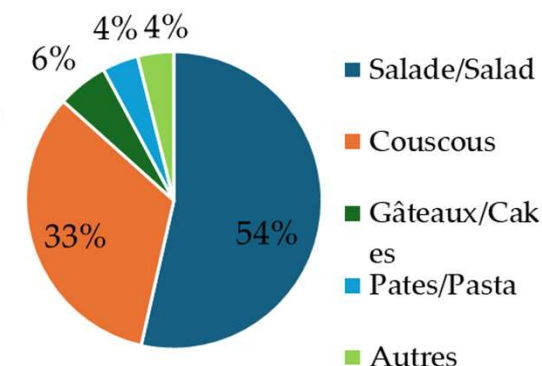
Have you ever consumed Quinoa?



What encourages you to consume quinoa?

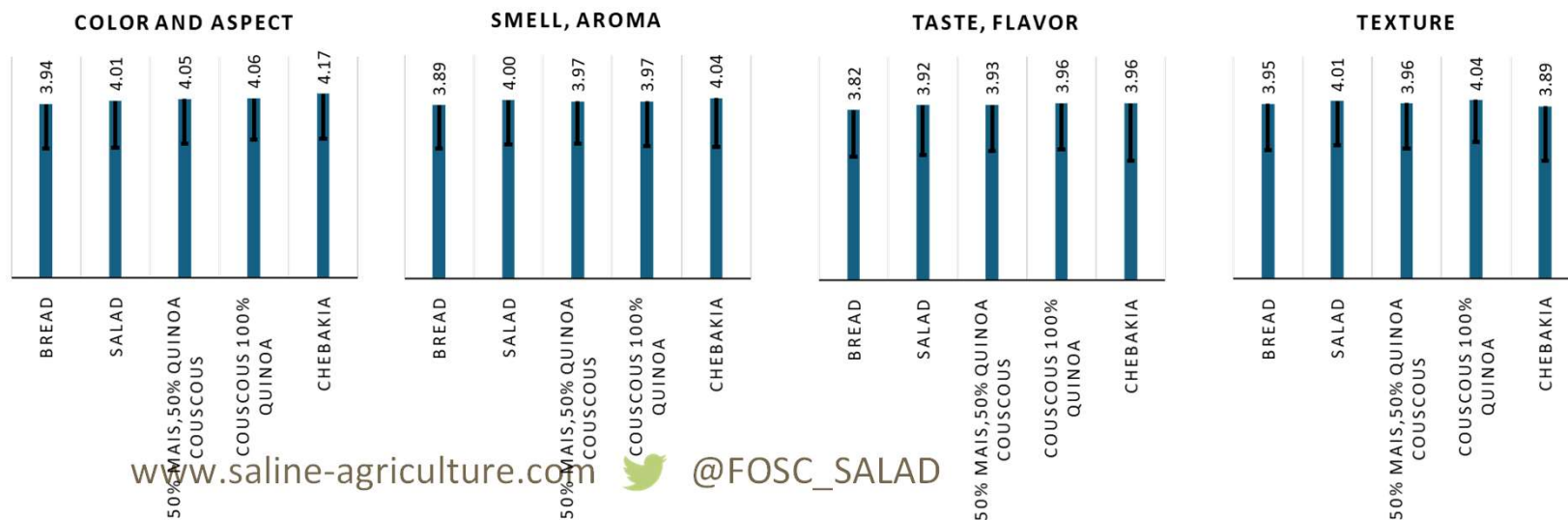


How do you consume Quinoa



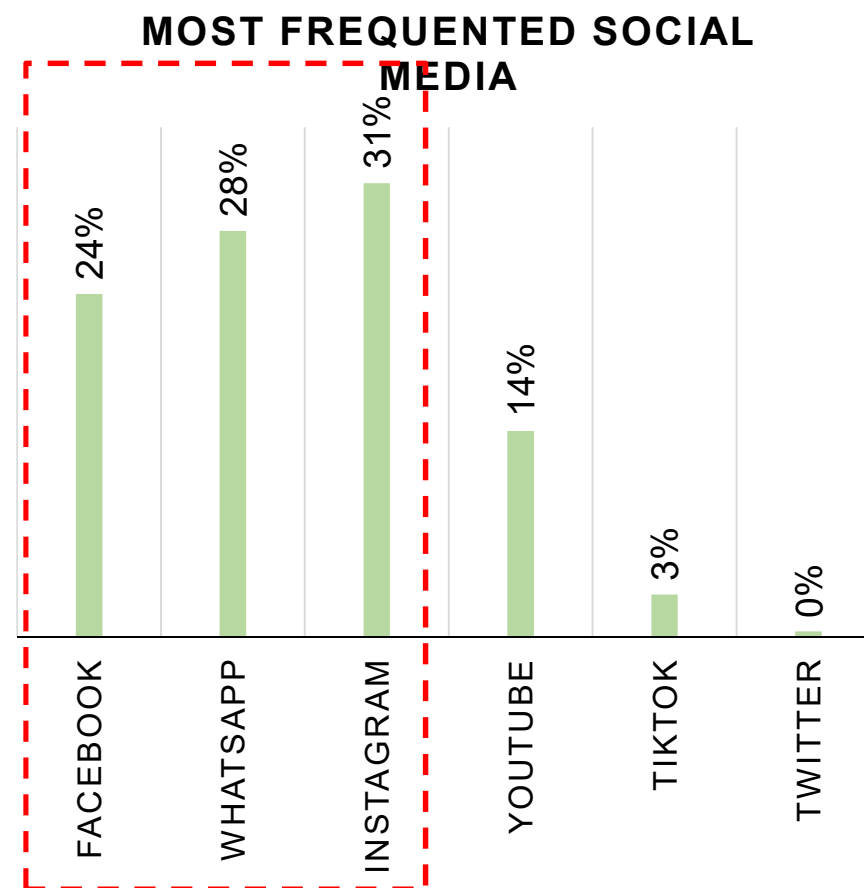
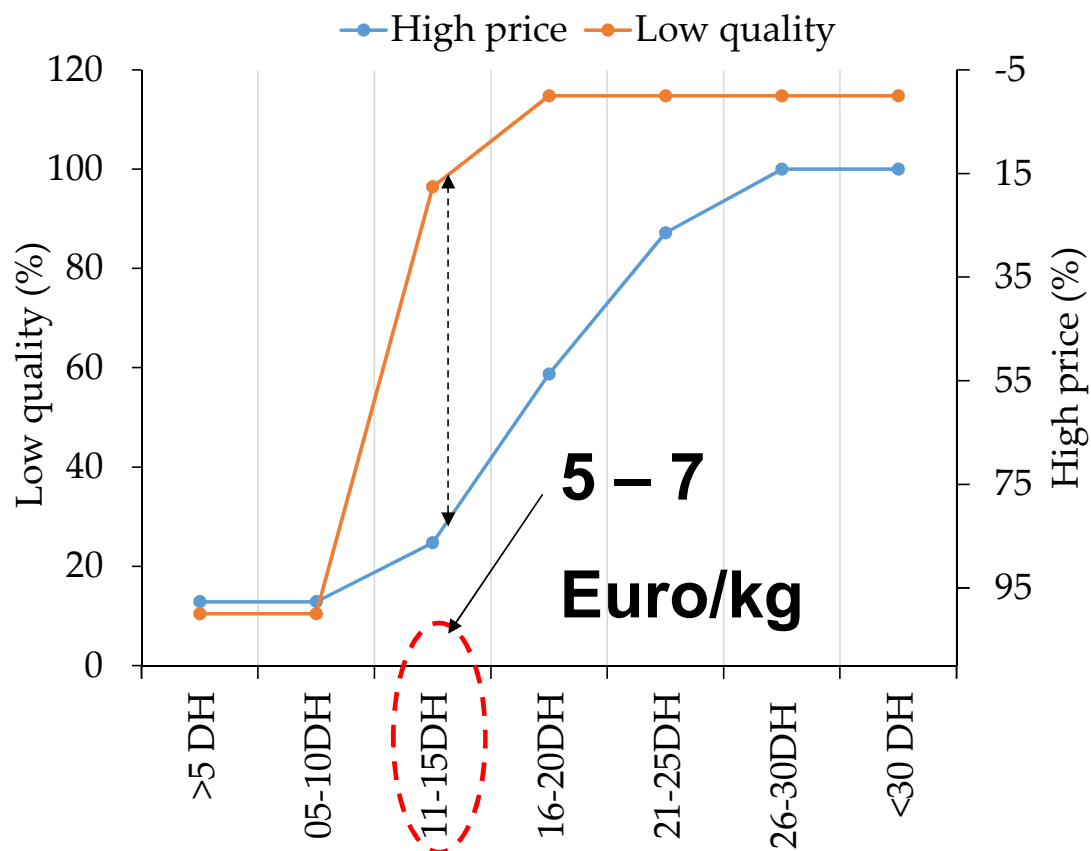
Sensory perception

Good acceptance rate of quinoa-based products (4/5)



Sensory analysis of tasted quinoa-based products in Morocco

Psychological price determination and frequented social media



Thank you!

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