

# Discovering potential nutraceuticals in drought and salt tolerant pomegranates grown with poor quality water in Central CA

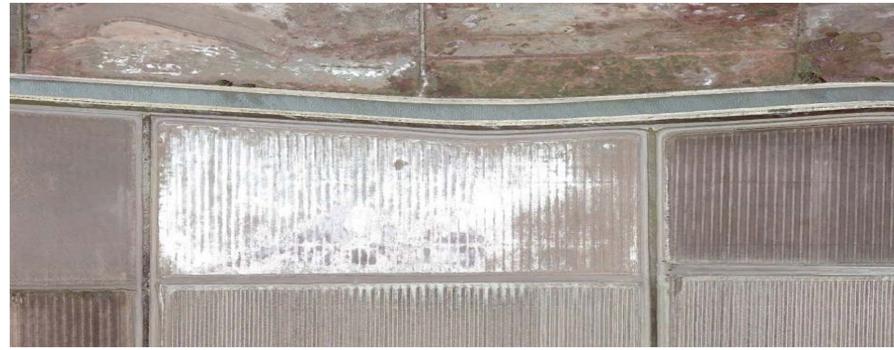


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## Poor water quality in Central California:

In the San Joaquin Valley, there are areas of high salinity in the soils and water that make the land traditionally unproductive. To change this, different agronomic practices have been put into effect to try and make these areas productive. Here, we made 6 different watering treatments to see how pomegranates fared under adverse conditions.



## Agronomic practices:

- Sustained deficit irrigation
- Use of salt resistance crops
- Precision agriculture (drip irrigation, fertigation)
- Use of drought-resistant crops (pomegranate, cactus, brassica)

## High sulfur-salt water treatments on pomegranates

6 treatments, 5 replications each, each tree was grown in an outside lysimeter:

White: 0.25 ppm Selenate, <1 dS/m salt

Yellow: 0.25 ppm Se, 4 ppm Boron, <1 dS/m salt

Red: 0.25 ppm Se, 6 dS/m salt

Brown: 0.25 ppm Se, 4 ppm Boron, 6 dS/m salt

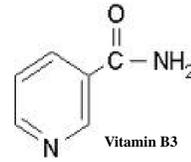
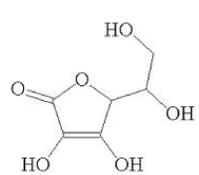
Pink: 0.25 ppm Se, 9 dS/m salt

Orange 0.25 ppm Se, 4 ppm Boron, 9 dS/m salt

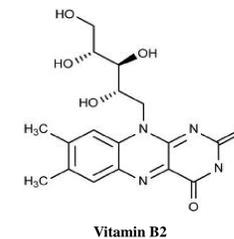
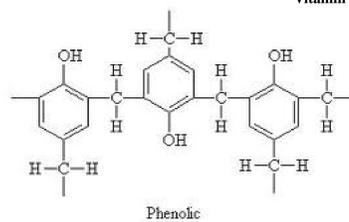
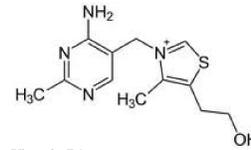
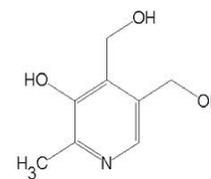
Nutraceuticals are products derived from food sources that provide extra health benefits, in addition to the basic nutritional value found in foods.

## Nutritional parameters analyzed:

Ascorbic Acid (Vitamin C)



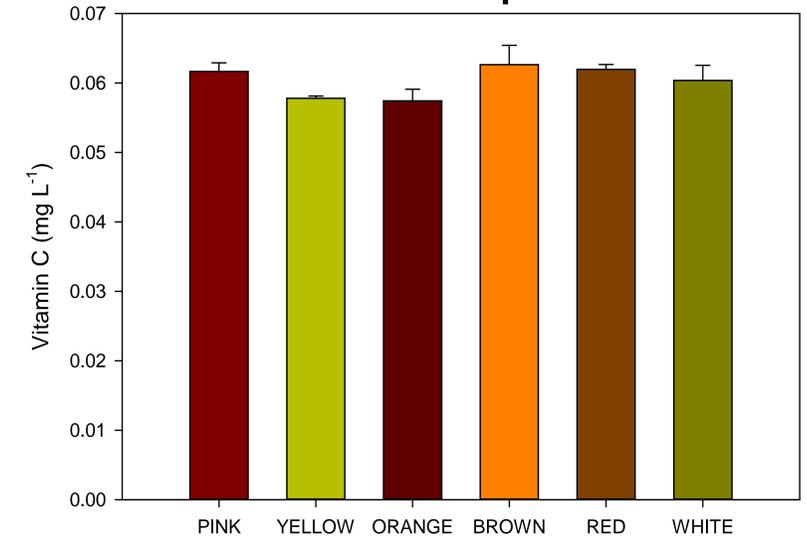
Vitamin B6



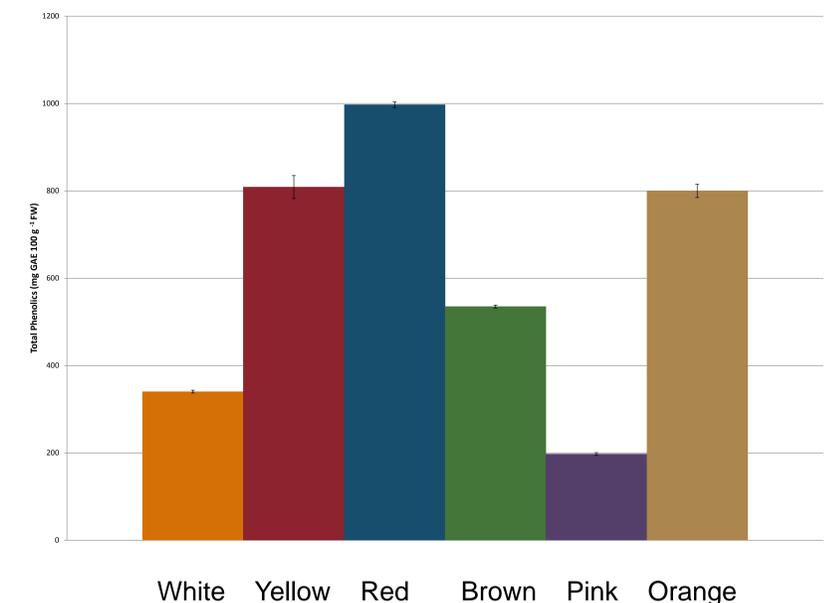
## Pomegranates – salt and Se treatments



## Vitamin C comparison



## Total phenolics comparison



## Conclusion:

We have identified pomegranates as an alternative salt and boron tolerant crop for use with poor quality waters. As a natural plant response to excessive stress, nutritional parameters were enhanced in the fruit. These changes may result in the production of new nutraceuticals