

### APPLICATION RESULTS ~ MANGO PROCESSING PLANT

#### INTRODUCTION:

Frutico is a mango processing plant in Guatemala. Each season, it receives fruits from different farms for cleaning, disinfection, packing and transportation to their destination, mostly for export. Like all produce for export, they require delicate processing and handling, with high quality requirements, to ensure they reach the market place in good quality and shelf life. The importance of high quality also includes the quality of the water used for processing.



As is typical in produce processing plants, chlorinated water is the primary method of cleaning and disinfecting the fruit, as a means of achieving high quality and long-lasting fruit. However, chlorine-treated foods are banned in Europe, Canada and in increasingly more countries, so a suitable alternative must be used to penetrate those markets.

In this plant, it was quickly determined that there are 3 key processes where the Puroxi products could immediately provide better quality in the processes, as well as reduce costs. Firstly - receiving and cleaning - chlorinated water and a special detergent are used to clean and remove all the latex covering. Secondly - Hydrothermal Disinfection - the fruit is submerged in water at 50 degrees Celsius, for approximately 3 hours to disinfect any internal contaminants. This process is done in several 25,000 litre tanks, where the main challenge is to keep the water hot AND disinfected for several (3) days if possible. Thirdly – ensuring that all equipment and facilities are disinfected throughout the entire plant.

#### OBJECTIVES:

Main objective for the first process is to increase the effectiveness of the 800 litre water tanks used to clean and disinfect the fruit. Currently, a maximum of 2 truck deliveries can be accommodated, before needing to replace the water. The other objective in this first process is to eliminate the use of detergent to eliminate the latex coating, and further reduce costs.

Main objective for the second process (Hydrothermal) is to maintain 25,000 litre tanks with clean and disinfected water for more than 3 days, thus greatly reducing the cost of changing and heating the water every 3 days.



#### APPLICATION METHOD:

The test was carried out for both processes and each process had its specific formulation of the Puroxi products to be used. In the 1st case, the Puroxi OB formula was prepared at a higher concentration (ppm) and neither chlorine nor detergent was used to remove the latex. In the case of the Hydrothermal process, the Puroxi OB formula was prepared without chlorine at a lower concentration (ppm). The rest of the process was carried out in the same way as the 1<sup>st</sup> case. In both cases, the water was constantly monitored to ensure the appropriate concentration of Puroxi OB was maintained. This ensured the purity of the water (from the microbiological point of view), as well as well as color, clarity, and cleanliness.

#### RESULTS:

The results were clearly evident and satisfactory. In the first process (receiving and cleaning), the use of ONLY Puroxi (OB) gave the same expected quality results, as usual, but WITHOUT using chlorine and detergent. Additionally, the efficiency of the 800 litre water tank was doubled, allowing to use it up to 4 truck deliveries. In the 2<sup>nd</sup> process (Hydrothermal), it was possible to maintain and recycle the water up to 6 ½ days (compared to 3 days previously), while maintaining the purity and clarity of the water.



### CONCLUSIONS AND RECOMMENDATIONS:

It was observed that water with an increased quantity of oxygen, not only disinfects the water from the microbiological point of view but also cleans and reduces the organic material, without the need for any additional chemicals. The increased oxygenation produced a dark and turbid color, which gives the impression of having dirty water, however, these are the impurities and latex being removed from the fruit. Overall, the resulting costs were much lower than previous, and the quality, appearance, colour, and taste of the fruits were significantly better, without the use of any harmful toxic chemicals

### TESTIMONY:

Mr. José Carlos López, head of quality control, supervised the entire procedure of testing and evaluation of Puroxi (OB) products and methods. The application procedures and methods of evaluating their effectiveness were performed separately for each process noted above, by a different team of people. Both teams indicated that the effectiveness of the products were clearly obvious, and they all recommend the continued use of the products, in lieu of current procedures.

**Our products, formulations, and application methods have shown proven success with disease resistance and pest prevention, and healthier, more robust plants. This is a bacterial issue and bacteria do not like oxygen. Due to increased oxygen levels and nutrient uptake derived from our product, any fungal or bacterial issues can be prevented or eliminated. We believe that you can counteract the cost of our product by eventually cutting back on fertilizers and pesticides.**

### DISCLAIMER:

The observations listed above are from specific situations, based on their own unique results and experiences. All water is different; every environment is different; every operator is different; every soil is different. And of course, each challenge of diseases or contaminants is different. We cannot guarantee you will see any specific result listed above. But what we can guarantee is that you will immediately have clean, clear, nutritional water, and in a very short time, better results than without our applications. When your plants and soil have healthy, nutritional water it's a good start. Raising the oxygen levels will further contribute to your overall production success. Application rates and methods vary from operation to operation.



### PROFILE

- Plant Name: Fruticultivos del Sur
- Place: Cocales, Escuintla
- Trial period: 8 days
- Type of plant: Mango processor
- Type of fruits: Tommy and others
- Climate: Tropical Humid

*If this makes sense to you, please give us a call; we would love to have you as a customer.*

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*Caution: Do not add fertilizers in the water at the same time as you add Puroxi (OB), without doing a Jar Test. Some fertilizers may plug emitters when mixed with Oxygen. Always consult your local Distributor or us, prior to application to ensure it is done correctly.*