



## 2013 Tomato Sauce (“Farmers’ Market Sauce”) Pilot Project Summary and Lessons Learned

### Summary

Fayetteville Public Schools (FPS) completed a local tomato sauce project in the summer of 2013 in partnership with the Fayetteville Farmers’ Market and The University of Arkansas Food Innovation Center (Department of Food Science pilot plant). The project was funded in-part by a USDA Farm to School Implementation grant. Tomato sauce was chosen as a product to use for the pilot project because tomatoes are in season and readily available at a reasonable price in NW Arkansas during the summer. It is a product frequently used on FPS menus and is a student favorite. The sauce will be used on lunch menus during Educational Lunches and at four pilot Seed to Student schools (three middle schools and the high school) during the winter when fresh, local produce is in limited supply. Typically, the four pilot schools would use approximately 600, #10 cans of sauce during the academic year lunch program, which is just a fraction of the district’s usage at fourteen schools. A taste test during the summer lunch program was hosted prior to completing the large batch processing to determine the best recipe to use. Recipes were adapted to meet The National School Lunch Program Meal Pattern (especially the 2013-2014 sodium guidelines) and have few ingredients and a simple flavor.

### Procedure

FPS partnered with the Fayetteville Farmers’ Market to promote the project among market growers and coordinate three “bulk buying” days during weekday markets. FPS requested second-grade tomatoes at \$0.40 per pound. This price was based on multiple grower price quotes and the price FPS currently pays for tomato sauce from their broad line distributor. All interested growers were allowed to sell their tomatoes to FPS. Tomatoes were purchased on Tuesdays and Thursdays for processing on Fridays. Raw product was held at proper temperature in the pilot plant’s walk-in cooler until processing. Tomatoes, and most other ingredients, were purchased with FPS Food Services funds. Fresh basil from two school gardens was used in the taste test and first large batch of sauce. A small amount of xanthan gum, sugar and small steel cans for test canning were donated by the pilot plant. To ensure all product purchased by FPS was covered by product liability insurance the Farmers’ Market purchased the tomatoes and invoiced FPS. The Market paid growers for their product, taking a 5% sales commission.

University of Arkansas Department of Food Science faculty provided guidance, expertise, volunteers and operators during the pilot planning phase and the three processing days. FPS was allowed to use the pilot plant free of charge. See the University Of Arkansas Department Of Food Science Pilot Plant Operation Description for a detailed account of processes and equipment used during the processing.

## Lessons Learned

- The FPS Farm to School Consultant's wage and a high price per pound for second grade tomatoes drastically increased the final product cost. The sauce would be more cost-effective by working processing into the daily work flow of the summer lunch program and using regularly scheduled staff. However, it was beneficial for the Consultant to be directly involved in each step of the pilot project to gain insight to improve efficiency and reduce costs in the future. In addition, it is important to our program and community that we pay our local growers a fair price for their product. With this consideration in mind, price per pound may be adjusted slightly in the future based on pilot project costs and grower bids.
- Using only Roma tomatoes, instead of tomato of any variety available, would ensure a more consistent and better tasting product because they are preferred for sauces.
- Second grade tomatoes should be sorted at the market by growers or market staff so only useable product is purchased. In the future, a FPS staff member will not be available to do sorting during bulk buying days. They will be available to pick up the product from the market to take to the processing site. In addition, processing procedures called for smaller and larger tomatoes to be run through different processing equipment to achieve the desired final product consistency. Tomatoes should be sorted and separated by size while being culled at market so sizing does not add to work time on processing days.
- It was possible to create a quality product that met strict sodium guidelines, though the flavor of the product would be more satisfactory if more salt could have been added. During taste tests and fall Educational Lunches students still seemed to like the low-sodium product.
- Using xanthan gum, a natural thickener, reduced cook time and resulted in a greater amount of final product. Xanthan gum should be added to cooking sauce after the desired Brix measure is achieved, otherwise it slows the rate at which the desired Brix measure is reached. Brix is a measure of soluble solids, or sugars, in the product and a proper Brix ensures product safety.
- Hot-fill, vacuum sealer bags were more cost effective than steel cans and safer for institutional food service use than glass jars.
- A #10 bag (10in x 22in) was the most appropriate product unit size for kitchen use and #10 cans are used in existing recipes, which makes it easy for kitchen staff to use the product.
- A brief orientation on processing plant and food safety expectations for all volunteers prior to entering the plant would be helpful to ensure volunteer and product safety. Having printed reference materials on-hand about the layout of the FIC and function of equipment would also enhance efficiency.
- Ensure all equipment is in good working condition prior to starting the project each day. Replace equipment if unusable or adjust protocol accordingly. Because of malfunctioning equipment during processing this summer, the majority of bags were not vacuum sealed which reduced product stability and self-life. Heat-sealer malfunction caused many of the sauce bags to leak. Bags were re-sealed, but the

clean-up and re-sealing process took time away from conducting the normal procedures.

- Creating an outline of the project phases and assigning specific duties to volunteers/ staff will reduce confusion and ensure product consistency. At times steps and processes diverged from the Operation Description due to transitions in volunteers and staff.
- Clarify food safety expectations, such as holding temperatures, for each stage of processing. Communicate relevant instructions to volunteers to enable them to carry out the procedure easily and consistently.
- Assign one person to all processing record keeping, including tacking amount of final product produced. This will help with cost analysis and inventory tracking after the project is complete.
- Finding the appropriate number of volunteers for duties available is important. Too many volunteers reduced efficiency and caused confusion.
- Bagged, finished product must be laid flat during the freezing process to ensure frozen bags are uniform in shape and can be boxed and stored in a way that uses space efficiently. This will also reduce the likelihood of the bags tearing within the boxes during transport and storage.
- It is best to have a consistent number of bags in all cases to help with maintaining accurate inventory. This would help with ease of storing, ordering, transportation and use in the meal program. Limit cases to 6, #10 bags so they are easier to lift.

<b>Project Numbers</b>
<b>283:</b> Bags of Farmers' Market Sauce produced
<b>\$3.46:</b> Cost of one, #10 can of current sauce from distributor
<b>\$5.84:</b> Cost of one, #10 bag of local sauce (without paid labor)
<b>\$7.50:</b> Cost of one, #10 bag of local sauce with paid labor (not including bulk buying day)
<b>\$8.90:</b> Cost of one, #10 bag of local sauce with paid labor (including bulk buying day)
<b>3,784:</b> Pounds of tomatoes purchased
<b>\$1,437.92:</b> Paid to local growers
<b>\$1,780.50:</b> Ingredient cost of project (including taste test and vacuum sealer bags)
<b>220:</b> Volunteer and free operator hours
<b>61.5:</b> Paid staff hours