Exercise in Strawberry Jam Manufacturing

FSC 41

Food Processing

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Lab: Strawberry Jam

Introduction: Jam preparation is a timeless skill that helped to preserve food for later consumption. It was not always a safe way to preserve food, however as technology has increased so has the level of concern over food borne illness.

This exercise allows us to get more familiar with lab equipment, methods such as hot fill hold, and put learned knowledge like water activity to use.

Materials and Methods: We used a ratio of sugar to fruit 55:45. 73.33 lbs of sugar was used to 60 lbs of strawberries, and 225 grams of rapid set pectin.

Ingredients:

IQF Frozen Strawberries

Sugar

Rapid set pectin

Citric Acid

Procedure:

1. Thoroughly mix the pectin with 3 lbs of sugar (from the amount of sugar you have

weighed and prepared before).

2. Prepare the citric acid solution: Dissolve 250 grams of anhydrous citric acid in 250

grams of warm water.

3. Add the strawberry and sugar (remaining sugar from Step C.1) into the steam-jacketed

kettle, and bring the mixture to at least 200 ºF while stirring. Make sure that the

strawberry and sugar are thoroughly mixed. Check the pH of the product.

4. Add the mixture of 3 pounds of sugar and pectin prepared in Step C.1 into the mix

slowly with the rest of the mixture.

5. Bring the mixture close to boiling (205 ºF) while stirring and then boil for at least ½

minute. Continue until the desired ºBrix is reached (66 ºBrix).

6. Reduce the heat, check the pH, if greater that 3.2 (pH = 3.0 – 3.2), add the standard

citric acid solution, and mix thoroughly.

7. Pump the jam mixture into the filler, and when the filling temperature has been

reached at least 185 – 190 ºF, hot fill into the 11 oz jars.

8. Cap, rinse and invert the jars: hold for at least three minutes to sterilize the lids.

9. Turn the filled jars right side up, and then transport to the cooler.

10. Pick up the cooled jars at the end of the cooler.

11. Dry and put on the table.

Procedure is from lab manual.

Results and Discussion:

73+73.3-0= Y = 146.33 lb

Solid Balance:

(0.09)S + X – 0(W) = (0.66)Y

0.09(73) + 73.3 = (0.66)Y

6.57+ 73.3 = (0.66)Y

Y = (79.87)/0.66

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Y =121.10 lb

Y = 1937.6 oz

1907oz was our theoretical fill weight; however because of losses we expected our actual fill weight to be lower. We can explain the increase in two ways; first, our product had a substantial increase in bubbles which filled the containers with air pockets allowing for less fillage per container. Second was the fact that our product did not set up properly. It was not the consistency that was desirable.

Things that may be the cause, and to avoid next time, Don’t use as much citric acid.