

Pizza Fermentation

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Problem / Question

What is the viability of using a sourdough pizza dough as a of reducing the need for a 3 day fermentation period?

Hypothesis

- Sourdough pizza will have very similar characteristics to a traditional 3-day fermented dough without taking as long to make

Project Overview

Cold fermentation is a method of yeast proofing in pizza doughs in which the dough is rested in a refrigerator for 3 days. This process slows down the rate of metabolic reaction in the yeast, allowing for a slower and deeper development of flavor. The slower reaction rate also introduces more gas into the dough, creating a larger crumb and deeper brown dough. While this process creates a superior dough, the three day process is inefficient and unrealistic for many home cooks. With this in mind, our goal is to create a viable alternative which is more achievable in the average kitchen. Our target time is around 12 hours, during which time the dough will be left unattended. To do this, we are going to use a sourdough style yeast, which is left in the fridge all the time, meaning that it will already be fermented when dough production begins. Based on the first trial using sourdough yeast, we will make other alterations in other batches, including time and environment. We will measure the success of the new dough with the color of the dough and the air pocket structure inside. There is no clear way to measure flavor, but these other factors are usually indicative of flavor development.





Variables / Research

| Controlled variables | Independent variable | Dependent variable |
|--|---|---|
| <ul style="list-style-type: none">TemperatureTime in ovenIngredients | <ul style="list-style-type: none">Type of dough3-day traditional fermentSourdough | <ul style="list-style-type: none">Crust brewingCrust bubblesRigidity of the pizzaCrust thickness |

Materials

| Materials (detailed list) | Quantity (be specific) |
|---|-------------------------|
| Bread flour | 250 grams |
| 00 Italian flour | 905 grams |
| Active yeast | 2 tsp |
| Salt | 22 grams |
| Mature sourdough starter | 98 grams |
| Water | 490 grams |
| Toppings (basil, mozzarella cheese, tomato sauce) | Constant desired amount |

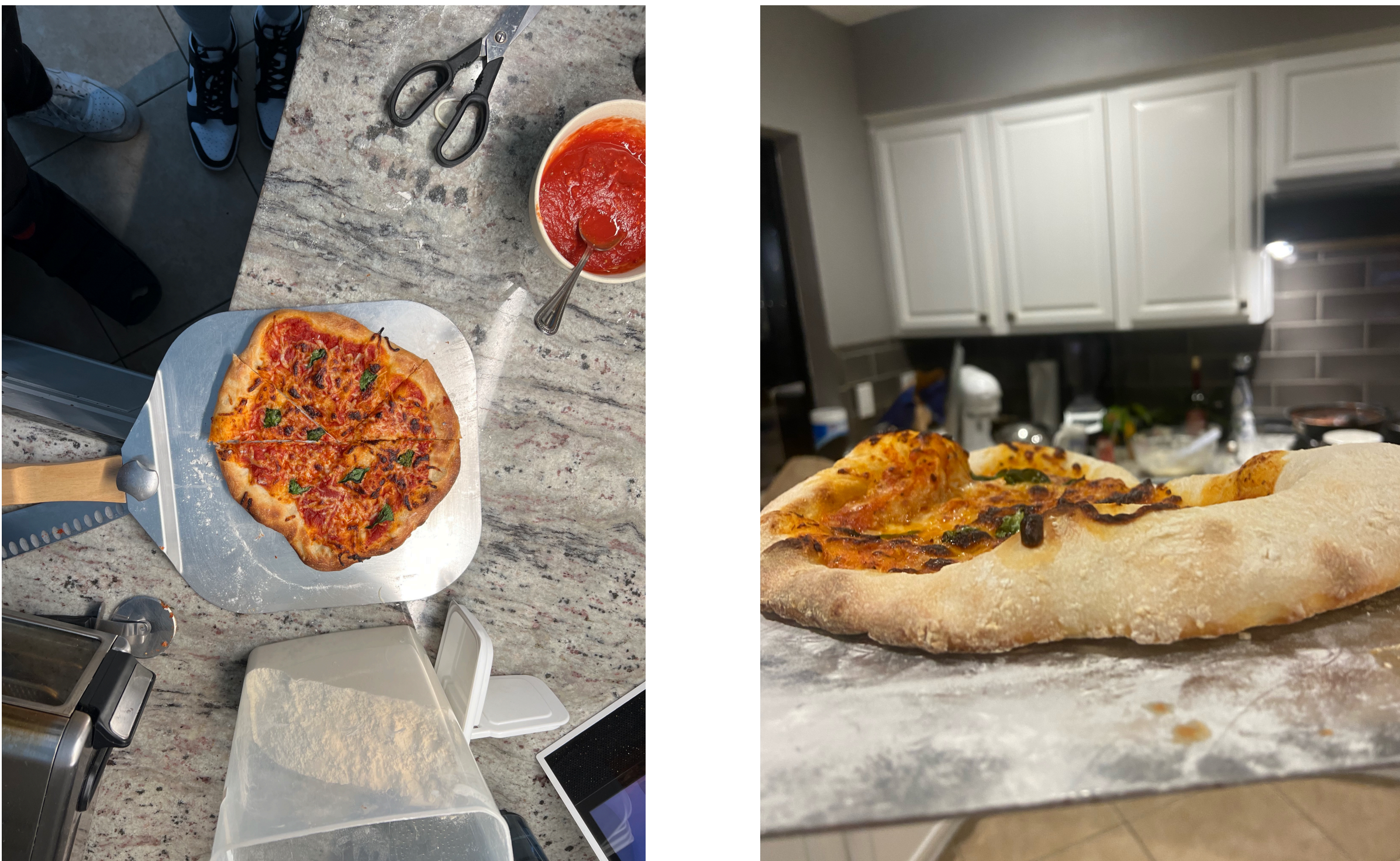
Procedure

| | | | |
|--|---|---|--|
| <div>Step 1</div> <div></div> <div><ul style="list-style-type: none">Make the 3-day ferment dough, wait three days for this</div> | <div>Step 2</div> <div></div> <div><ul style="list-style-type: none">On the final day make the sourdough pizza dough</div> | <div>Step 3</div> <div></div> <div><ul style="list-style-type: none">Bake both pizzas at 500 degrees Fahrenheit for 11 minutes</div> | <div>Step 4</div> <div></div> <div><ul style="list-style-type: none">Use pizza criteria variables to compare pizzas</div> |
|--|---|---|--|

Data / Observations

- Sourdough air pockets: 5
- 3-day fermented air pockets: 8
- Sourdough has more even browning
- 3-day fermented has better stability

Results



The sourdough pizza came out denser and thicker than the fermented dough (before baking). The 3-day fermented pizza and the sourdough pizzas, despite having a denser dough, achieved the goal of an unevenly brown crust. The 3 days fermented pizza was more elastic than the sourdough before baking, this was reflected in the height difference post-baking in which the sourdough was thicker and taller. Although taller, the sourdough pizza had fewer, but bigger air pockets compared to the 3-day pizza dough. After baking the 3-day fermented pizza dough was more stable compared to the sourdough pizza.

Conclusion

Ultimately the 3-day fermented pizza is better based on criteria previously discussed, but the sourdough pizza is more efficient to make because of the significantly reduced fermentation time required. In addition to researching how to make the pizza production process more efficient, sourdough is known to be a viable alternative to regular breads for some people with gluten intolerance. This could work with pizza, but further research is required to see the viability of this option.

Works Cited

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