– Chapter 4 –
Dough-making

Along with quality ingredients in the right proportion, proper procedure is vital for making consistent quality dough. This chapter describes the steps and formulas for various types of dough. The discussion presumes that you have a basic knowledge of dough-making equipment and ingredients, as described in previous chapters.

> Lengths, weights, temperatures, and volume measurements are given in inches, pounds and ounces, degrees Fahrenheit, and quarts and cups (U.S. version). The following abbreviations are used: **lb** = pounds, **oz** = ounces, **F** = Fahrenheit, and **qt** = quarts. For conversion to other measurement systems, refer to the chapter on Measurements and Conversions.

The Ready-to-Use Option

There are two alternatives to mixing dough on-site: (1) frozen dough and (2) parbaked crust. Both approaches eliminate the need for scaling, mixing, and handling fresh dough. They also eliminate the need for a mixer, but frozen dough requires a freezer.

The main advantage of frozen dough and parbaked crust is the elimination of the drawbacks to on-site preparation. Summarized, this includes doing away with a mixer and also the hassle and occasional mistake that can accompany dough-making. It also reduces work, which presumably results in lower labor cost.

The main drawback to frozen and parbaked product is the lack of opportunity to create a custom recipe and, so, to differentiate from the competition. It also takes away the opportunity to advertise “freshly mixed dough made with a secret

formula, etc.," along with removing the chance to create specialty crusts and enhance the current crust. Finally, frozen or parbaked product incurs a higher food cost than preparing from scratch.

In short, the dough/crust decision is an important one. There is no one right answer for all pizzerias. The decision depends on the situation and priorities of the business, including customer perceptions and preferences, competitive situation, available space and equipment, pricing structure, and management involvement and availability.

For those pizzeria owners who want to design a custom crust, or simply seek to know more about how pizza dough is made, the rest of this chapter is for them.

Baker's Percents

For convenience, bakers refer to ingredient amounts in a dough formula as a *percentage of total flour weight.* That means, regardless of how much flour a formula calls for, the flour amount is always considered to be 100 percent and every other ingredient is referred to as a percentage thereof. For example, if a formula calls for 25 lb flour and 15 lb water, they would say that the formula consisted of 60 percent water (15 ÷ 25 = .60 or 60 percent). They call this a *baker's percent.* To further illustrate, if a baker said "lower water by 5 percent," this would mean that the water portion should be reduced 5 percent of the weight of the flour portion called for by the recipe.

Throughout this chapter and other chapters on dough, whenever we mention percentages we're referring to baker's percents. So keep in mind that these percents refer to a percent of the *total flour weight* in the dough formula, not a percent of total dough weight.

Two Variations: Dough Ball and Bulk

Based on how the crust is made — whether rolled from a ball or cut from a sheet of dough — there are two basic dough-making methods: (1) dough ball and (2) bulk. In the *dough ball method,* dough is scaled and rounded into proper-weight balls, then trayed and, most probably, retarded. In the *bulk method* dough is placed into tubs in large pieces, called in-bulk, then fermented in preparation for

sheeting. Or, sometimes, fermentation is omitted and the dough is simply bench-rested and then sheeted immediately. Here's the steps in each method.

Dough Ball Method

1. Set-up.
2. Rehydrate yeast and scale ingredients.
3. Mix.
4. Scale, round, and tray balls.
5. Retard (i.e., refrigerate) or else proof for immediate rolling.

Bulk Method

1. Set-up.
2. Rehydrate yeast and scale ingredients.
3. Mix.
4. Load into tubs and ferment.

Sometimes the fermentation step is skipped and, instead, dough is bench-rested for a few minutes, then taken to the sheeter. A gluten-relaxing dough conditioner (ex., L-cysteine) is often used for this process.

These steps are described below in full.

Dough-making Steps

This section explains the hows and whys of dough-making, so it's lengthy in parts. For an exact description of dough-making procedure see the *Sample Production Procedure* section at the end of this chapter.

Pizza dough-making derives from traditional bread-making. Ingredients are the same, however procedures are not. In bread-making a baker determines the exact timing of up to eleven steps from set-up to oven. In pizza dough-making only five steps are controlled by the dough-maker — after that the customer takes over. This complicates and changes the pizza dough-making process to the point where much of conventional bread-making procedure doesn't apply. So we take what can be used from the science of bread-making, then add to it to create the *technology of pizza dough-making*. Here are the steps.

STEP 1: Setting-up

The important first step of efficient dough-making is proper set-up. It typically involves the following:

- Plan production. Post a production sheet; determine number of batches (dough balls) to be made.
- Clear tables and work area of unneeded items.
- Gather utensils: Containers, thermometer, timer, scale, measuring spoons and cups, knives, dough scraper, trays.
- Gather ingredients: Flour, yeast, etc.
- Assemble the mixer. With a planetary mixer use the dough hook — either J-type or spiral. With a cutter-mixer use the shaft recommended for dough by the manufacturer.
- Arrange the work area for efficient production.

STEP 2: Rehydrating Yeast and Scaling Ingredients

As discussed in the section on Yeast, proper rehydration is critical. The procedure is as follows.

Rehydrating Yeast

1. **Rinse the yeast bowl with warm water to pre-warm it.**
2. **Add water of proper temperature to the yeast bowl** — use approximately 10 percent of the water called for in the recipe, but not less than 4-times the weight of the yeast. For water temperature, follow directions on the yeast package. If there's no directions, use the temperatures below. Measure temperature *by thermometer*, not by feel.
   - Compressed yeast = 80 to 90 degrees F water
   - REGULAR active dry yeast (ADY) = 100 to 110 degrees F water
   - INSTANT dry yeast = 100 degrees F water (in certain recipes instant yeast is added dry to the flour).
3. **OPTIONAL: Add a small amount of sugar to the water** — stir to dissolve. Use about 1 teaspoon sugar per pound (or pint) of yeast water. If the recipe omits sugar, substitute flour.

4. **Measure the exact amount of yeast needed and sprinkle (or crumble) it over the water.** The best method is weighing. If the portion is too small for accurate weighing, use measuring spoons. Measure level, not rounded. Stir it thoroughly into the water to dissolve. To control the rate of fermentation or rise, either the yeast portion or the dough water temperature must be adjusted seasonally. Further explanation is provided in the upcoming sections on Yeast Portion and Dough and Water Temperature.
5. **Put the yeast bowl aside and set a timer for 10 minutes.** The location should be room temperature (70 to 80 degrees F).
6. **After 10 minutes, check the yeast water for foam.** If there is none, one of these problems exists: (1) yeast is old or dead, (2) water was wrong temperature, or (3) sugar was omitted, or salt was used instead of sugar. Correct the problem and repeat steps 1 to 6. Do not rehydrate yeast for longer than 15 minutes.

YEAST PORTION. Dough fermentation rate will vary with seasonal and daily temperature changes. The warmer the air, the faster dough balls rise and, if pan proofing is used, the faster dough rises in the pan. So to control the amount of fermentation or rise, adjust the yeast portion accordingly. To achieve faster rise, increase the portion, say, 10 to 20 percent. To slow it down, decrease the portion. In conclusion, *adjust the yeast portion by whatever amount is needed to achieve the amount of fermentation you desire.* An alternative to adjusting the yeast portion is to change the dough water temperature — cooler in summer, warmer in winter (see upcoming section).

Scaling Ingredients

While yeast is rehydrating, scale the remaining ingredients. Follow these pointers.

- **Measure dry ingredients by weight, not volume.** However, if a measuring spoon must be used, use level measures, not rounded (scrape it flat with a straight edge). Water and oil can be measured by either weight or volume. When measuring by volume, a glass or plastic container with a level marking line should be used.
- **Use an accurate scale.** It's a good idea to have a standard weight handy to check the scale now and then for accuracy. For absolute precise weighing, an electronic scale is best. However a mechanical portion scale with 32 oz capacity in 1/8 oz increments will work fine for small ingredients. A dashpot feature which eliminates needle bounce speeds weighing. For flour and water, a mechanical dial scale will do the job, although electronic and balance beam