

As sprouted wheat continues to cause problems for bakers, this article will provide some considerations that should help to correct this defect during baking. We will also discuss the importance of the maturing process of the flours after the production process.

The effect of flour quality on baking behaviour

Germinated wheat flours

When cereal crops are not harvested at the right time and the right levels humidity and temperature are experienced, grains can germinate prematurely. Premature germination can be both visible and invisible, with invisible germination occurring inside the grain, where enzymes cause or accelerate the degradation of starch into sugars.

Alpha-amylases can also transform starch into dextrin, which can have a sweetening effect at the time of preparing the dough, increase during fermentation until the bread enters the oven. Alpha-amylases are deactivated at 70-75 degrees Celsius, at which point it will stop producing dextrin.

How to correct them?

- The temperature of the dough must be lower than usual (22 to 24 degrees Celsius)
- The pre-fermentation or rest of the dough must be shorter.
- The dough must have more consistency, to compensate for its relaxation
- The enzymatic activity can be moderated by a stronger acidification of the dough, using more acidic sourdoughs. If acidification is obtained by prolonged fermentation, the dough relaxes, degrading much more starch
- The pieces must be smaller. The smaller the crumb, the faster the

critical temperature zone of 75 degrees Celsius is passed inside. This phase lasts longer in larger breads, so the effect of amylases on the starch will cause greater damage

- Cooking must begin with a very hot oven and finish at a lower temperature.



The ripening of the flour

The manner in which the flour evolves becomes much more favourable if it is kept in storage for a few weeks. This is thanks to certain processes that are related to oxidation, as demonstrated by Kent Jones in 1926.

The aged or mature flour apparently provides greater strength, the dough is also more elastic and the bread has a greater volume, better texture and a more pleasant colour.

The time it takes for the flour to reach the optimal conditions to be baked is highly variable and depends on the more or less intense aeration to which it is subjected. In winter the transformation is slower. On the other hand, if the storage is prolonged in excess, the quality of the flour decreases and in addition there may be a danger of infestation by insects and stored flour does not age evenly.

Today oxidising agents, whose mission is to produce certain changes similar to natural maturation but in a shorter time, are often used. With the use of these agents, the maturation is accelerated, obtaining more attractive and voluminous loaves, but they achieve that the flour is denatured, producing loaves with an insipid taste.

The flour, before its transformation, must mature for a period of 15 days, in old wheat. In the case of young wheat (just harvested), this maturation will be at least one month.