



# Small-scale artisanal processing of minor cereals into bulgur

## Problem

Farmer-processors and small-scale processors have the tools and knowledge to produce everyday cereal-based foods, such as bread and pasta, using artisanal processes. However, they are looking for new products to diversify their offer. Moreover, farmers and small-scale processors using minor cereals are looking to differentiate their products on the market.

Bulgur is considered to be a healthy food and organic shops report a consumer demand for this product. Small-scale artisanal bulgur production processes using minor cereals could provide alternatives to industrially processed durum wheat bulgur, but there is a lack of knowledge and practice on this subject.

## Solution

As part of the DIVINFOOD project, tools and parameters for processing minor cereals into bulgur were tested in order to provide farmers and processors with an advanced solution.

The development stages were as follows:

- Documentary research to define a manufacturing diagram adapted to small-scale artisanal processing,
- Experiments with durum wheat at a small-scale artisanal level to test the parameters, adjust the manufacturing stages and establish the optimum parameters for each stage (see Figure 1),
- Physico-chemical analysis (dry matter, water absorption, color, texture of cooked bulgur) of the experimental results to obtain the optimum product,
- Adaptation of the manufacturing diagram to minor cereals (einkorn and rivet wheat),
- Sensory analysis (blind tasting and comparison with marketed products).

## Applicability box

### Theme

Minor cereals processing

### Reference conditions

Clean and safe processing conditions

### Application time

Anytime from 1 month after harvesting (commonly considered resting time for a new harvest before processing)

### Required time

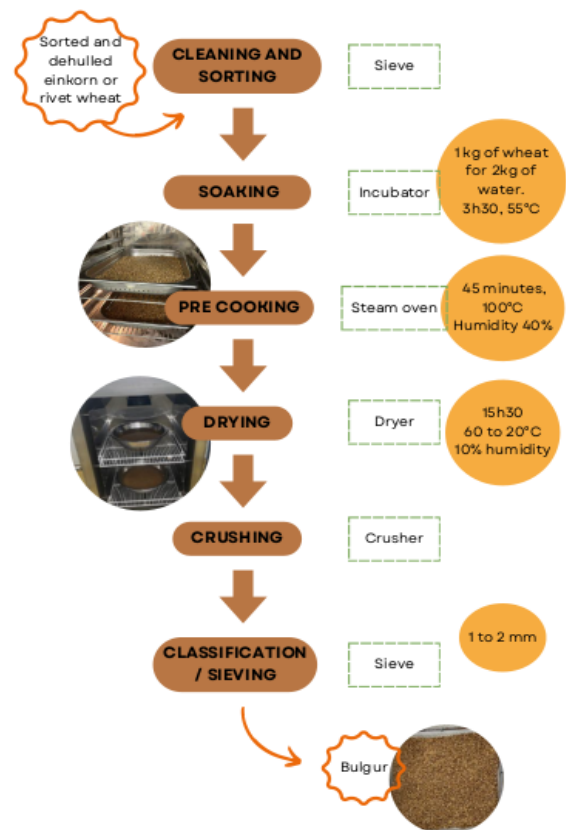
The full process lasts a few hours, unless soaking overnight

### Equipment

Steam oven, dryer, crusher, sieve systems

### Best in

Farmer-processor or small-scale processor settings



**Figure 1.** Bulgur artisanal manufacturing diagram for einkorn and rivet wheat

## Benefits

This diagram for the artisanal manufacturing of bulgur from minor cereals fills a gap of knowledge and practice. It will enable farmers and small-scale processors to diversify their range and capture more added value from minor cereals. No additional equipment is needed to process bulgur compared to pasta. Moreover, bulgur can be easier to cook than artisanal pasta in collective catering.

## Practical recommendation

The soaking time can be adapted to the raw material used by producers. The use of a steam oven is recommended to precook the bulgur correctly. The drying diagram can be adapted by producers to achieve a dry matter content of less than 12%, which is essential for good preservation and to reduce the risk of mould contamination and the presence of mycotoxins in the final product. The bulgur must be well spread out on the clay for effective drying.



**Figure 2.** Bulgur artisanal processing trials from einkorn (left) and rivet wheat (right)

## Further information

### Further readings

Codex Alimentarius Commission, 2019. Codex Standard for Durum Wheat Semolina, Couscous and Bulgur (Codex Stan 163-1987). <http://www.fao.org/fao-who-codexalimentarius>

Evlice A. K., Özkaya H., 2020. Effects of wheat cultivar, cooking method, and bulgur type on nutritional quality characteristics of bulgur. *Journal of Cereal Science*, 96, 103124. <https://doi.org/10.1016/j.jcs.2020.103124>

Stone A. K., Wang S., Tulbek M., Koksel F., Nickerson M. T., 2020. Processing and quality aspects of bulgur from *Triticum durum*. *Cereal Chemistry*, 97(6), 1099–1110. <https://doi.org/10.1002/cche.10347>

Terras D., Djebballi K., Jedidi E., 2019. Influence of process parameters on bulgur quality. *Quality Assurance and Safety of Crops & Foods*. 11(5): 431-439. <https://doi.org/10.3920/QAS2018.1303>

## About this practice abstract and DIVINFOOD

**Publisher:** EIP PURPAN, BIOCIVAM11

**Authors:** Gwenaëlle Jard, Loubnah Belahcen, Axel Wurtz

**Permalink:** 10.5281/zenodo.14008315

This practice abstract was elaborated in the DIVINFOOD project, based on the EIP AGRI practice abstract format. It was tested in ((indicate conditions))

DIVINFOOD - Co-constructing interactive short and mid-tier food chains to value agrobioDiversity IN healthy plant-based FOOD, is running from **March 2022** to **Feb 2027**.

**The overall goal** of DIVINFOOD (a multi-actor, participatory project) is to facilitate the use and increase the value of Neglected and Underutilised Crops (NUCs) in food chains to foster healthier diets and more sustainable food systems.

**Project website:** [www.divinfood.eu](http://www.divinfood.eu)

© 2024

