Abstract
Freezing represent one of the most utilized food preservation methods. Classical freezing techniques have harmful environmental effects especially because of the refrigerants, which contribute to the ozone layer depletion and to the increase of the greenhouse effect. Individual quick freezing (IQF) by direct contact with cryogenic agents such as liquid nitrogen (LN) has a significantly reduced ecological footprint, since nitrogen is a component of atmospheric air, and therefore it does not pollute. Liquid nitrogen is a by-product of air liquefaction which otherwise should be disposed. The effectiveness of liquid nitrogen IQF is vastly superior to that obtained by means of classical methods. The paper aims at highlighting this superiority, reflected mainly by the greatly reduced freezing time. The Lacroix and Castaigne method is used to determine the total time necessary to reach the prescribed freezing temperature in the thermal center of the product (in this case, green peas). This way, we prove that individual quick freezing using liquid nitrogen is characterized by much higher process rates and in addition it benefits from using an environmentally friendly refrigerant, thus contributing to sustainable development.

Key words: individual quick freezing, liquid nitrogen, freezing time, environmentally friendly refrigerants, sustainable development