



SMART BIOTECHNOLOGY MANAGEMENT FOR THE PRODUCTION OF THE INNOVATIVE ECOLOGICAL BAKERY PRODUCTS

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Abstract: The experiment aimed to identify organically certified flours, which were used as raw materials in baking biotechnologies. The research used 5 types of organic flours and one standard reference flour. The experimental results focused on the hydration capacity of the organic flours: organic Spelt flour T630 49.85%, organic white flour T650 52.74%, organic Spelt flour 1050 51.12%, organic whole meal flour 49.28%, organic multigrain flour 54.73%, as well as the standard T650 which had 50.79%, while black flour with seeds had 62.58%. ext

Introduction

Bread is probably the oldest ‘processed’ food product [4] (Katsi et al., 2021) and it plays an essential role in the diet of different cultures and regions throughout the world [12] (Zamaratskaia et al., 2021). Nowadays, modern agriculture has prioritized allocating resources towards attaining higher yields in wheat production [5] (Molfetta et al., 2021). The farmers have involved selecting genetically homogeneous varieties that are well-suited for cropping systems demanding substantial inputs such as fertilizers, herbicides, insecticides, and fungicides. These varieties are commonly referred to as modern varieties [3].

Material and method

The research paper aimed to design and innovate varieties of organic breads made from certified organic flours. The raw materials used in the production were: Organic Spelt flour T630, Organic Spelt flour T1050, Organic Whole wheat flour, Multigrain flour, Black flour with seeds, Organic Flour T650, Standard flour T650. The experimental results focused on: analyses of the technological characteristics of the flours, determining the hydration capacity and acidity of the flours as a raw materials, the moistures of the doughs

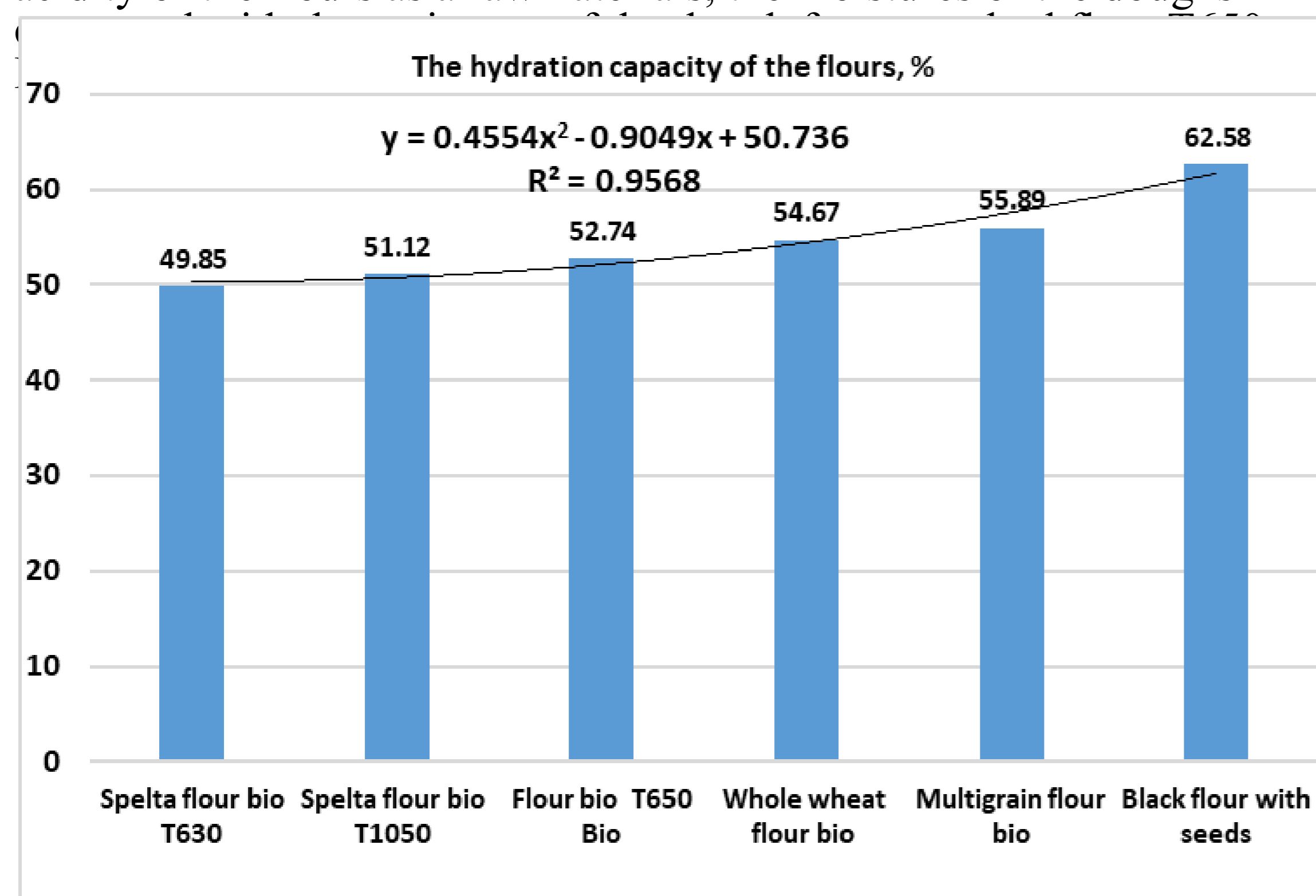


Figure 1. Dynamics of the hydration capacity in the organically certified flours

Results and discussions

Text

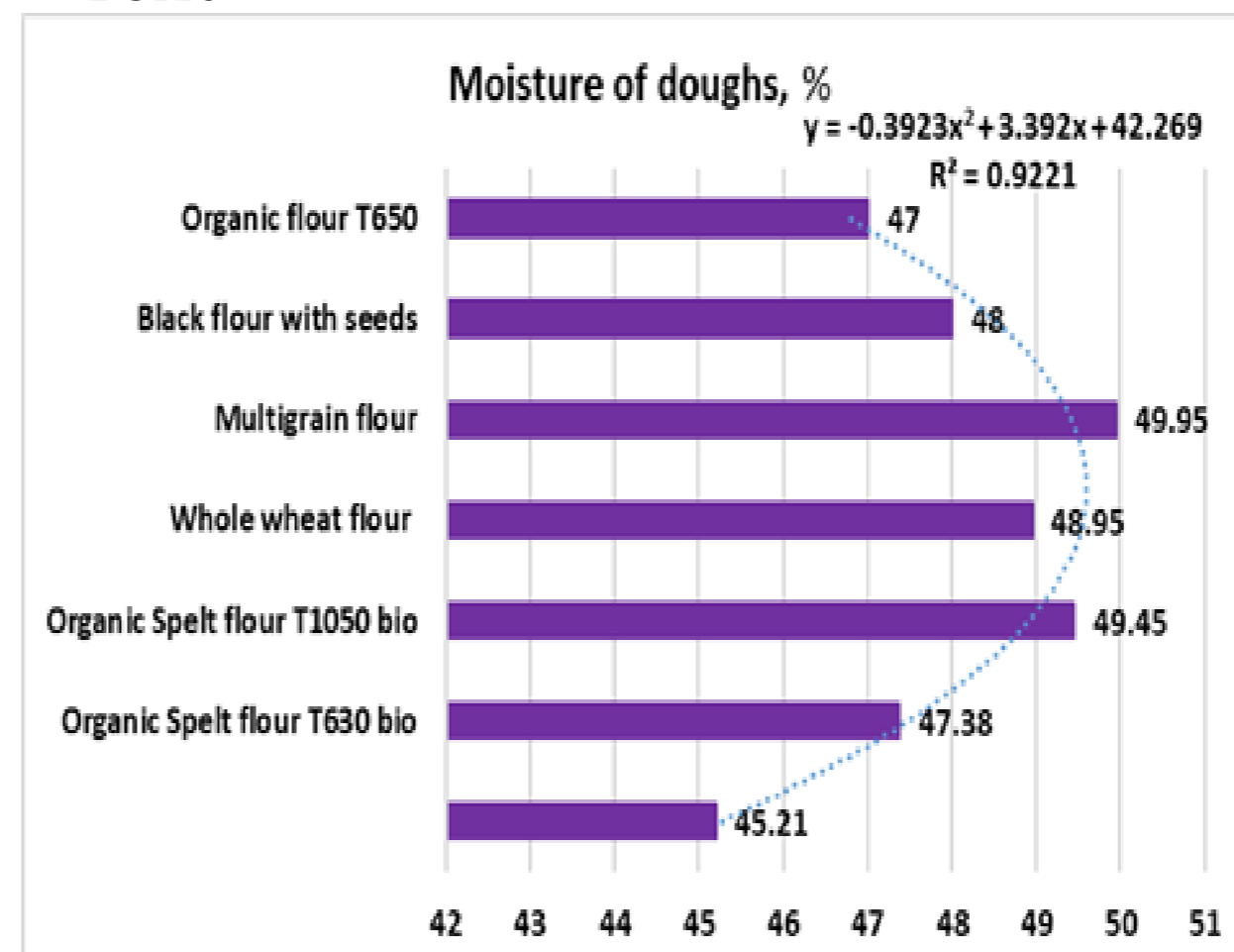


Figure 2. Variation of the moisture of the bakery doughs obtained from organic flours

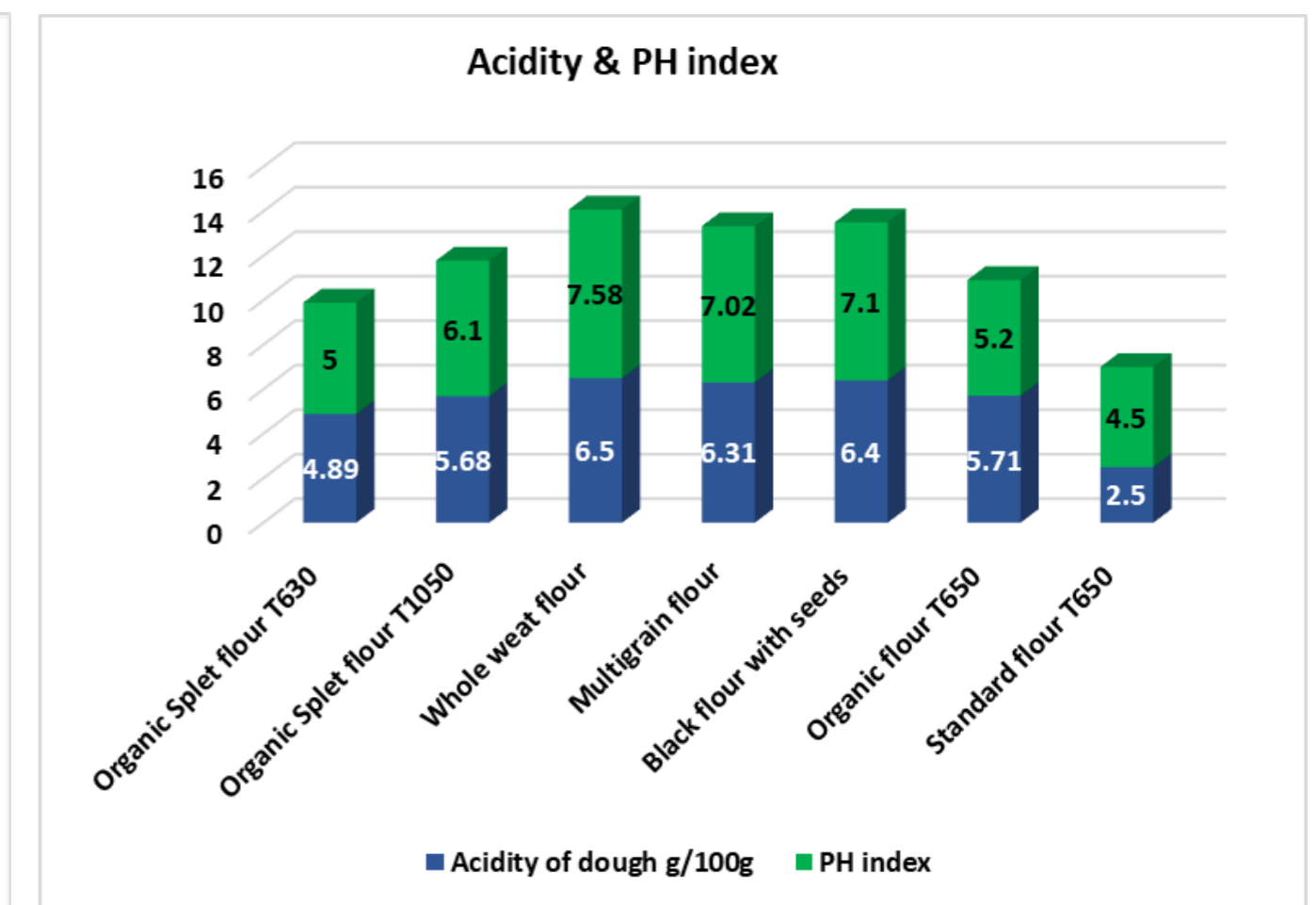


Figure 5. Variation of the dough acidity and pH index

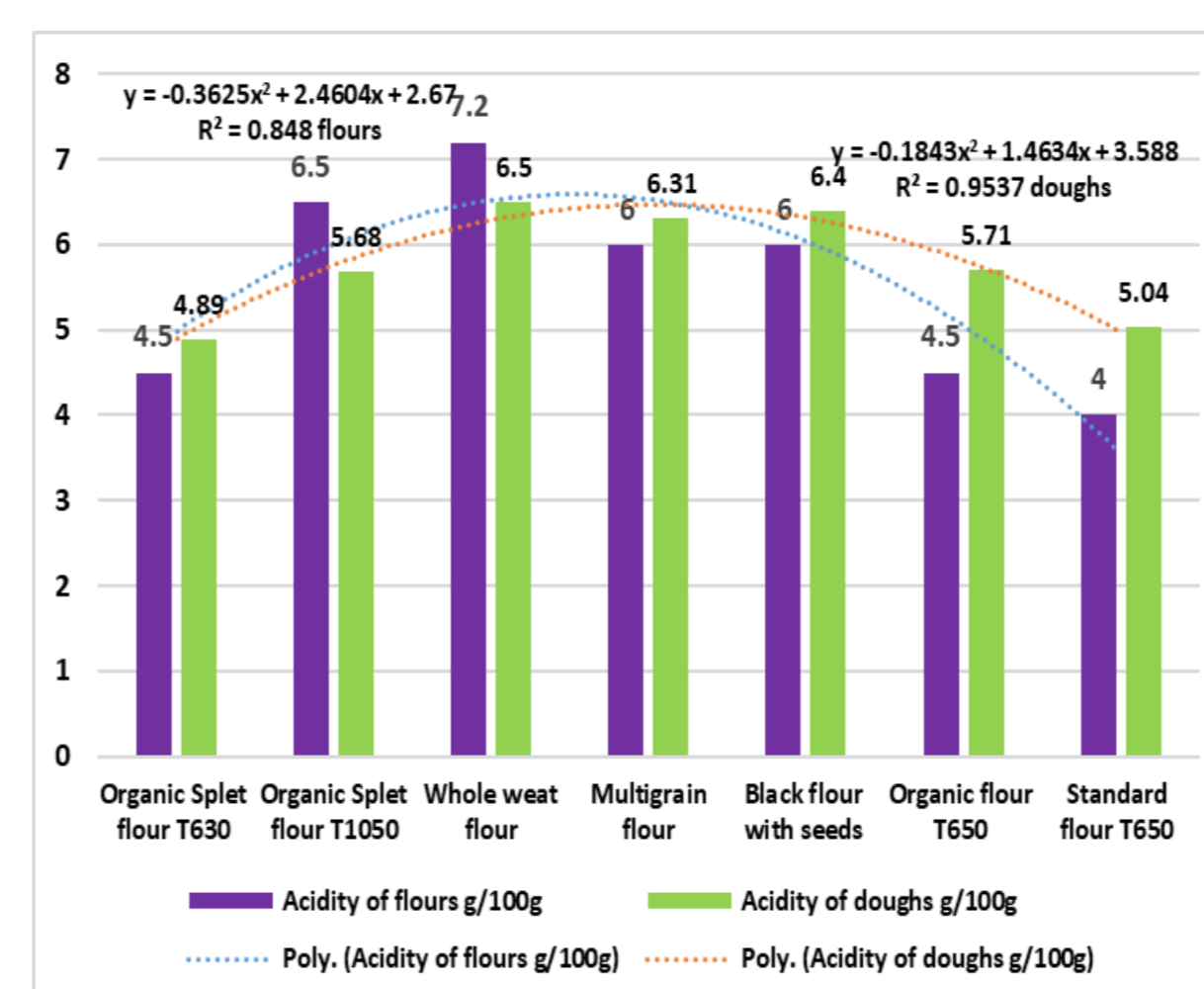


Figure 4. Evolution of flour acidity compared to the acidity of bread dough

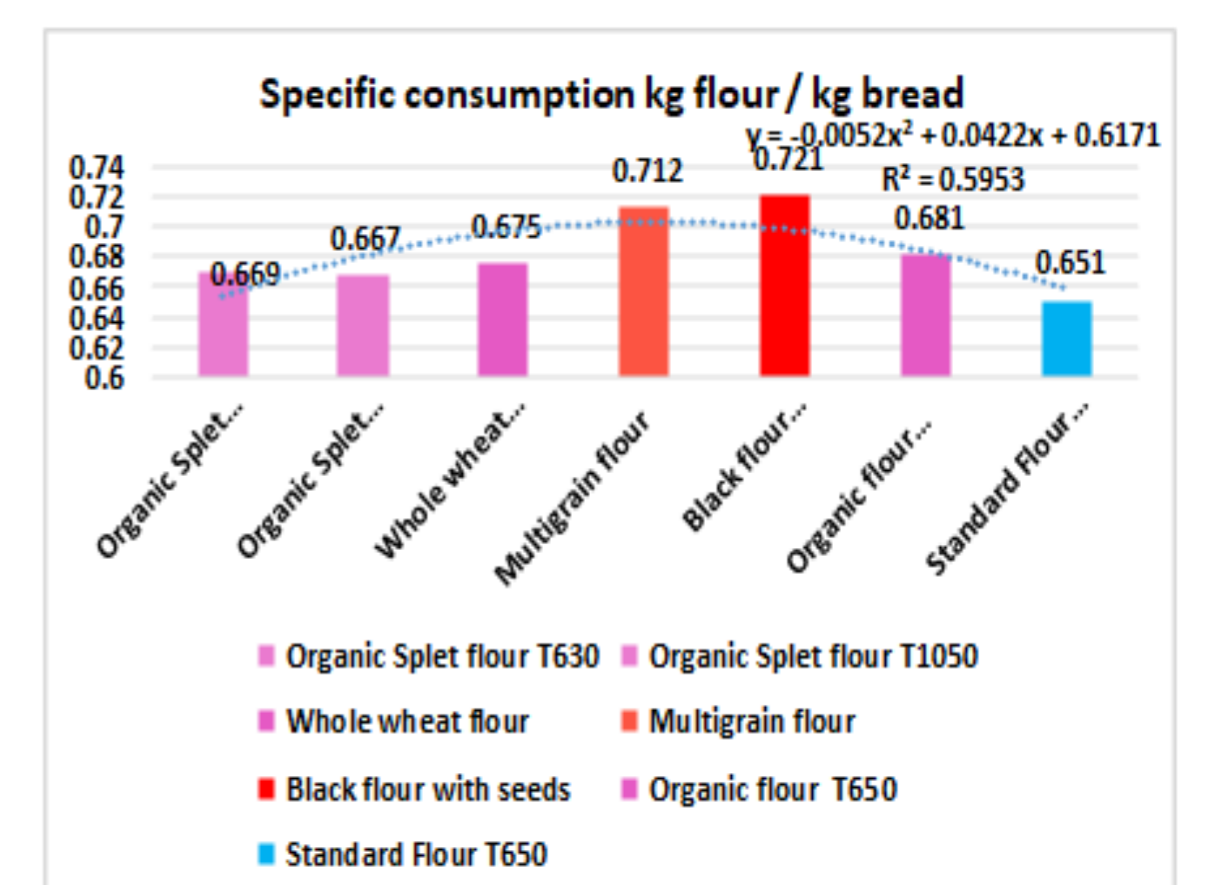


Figure 6. Variation of the specific consumption of the organics flours

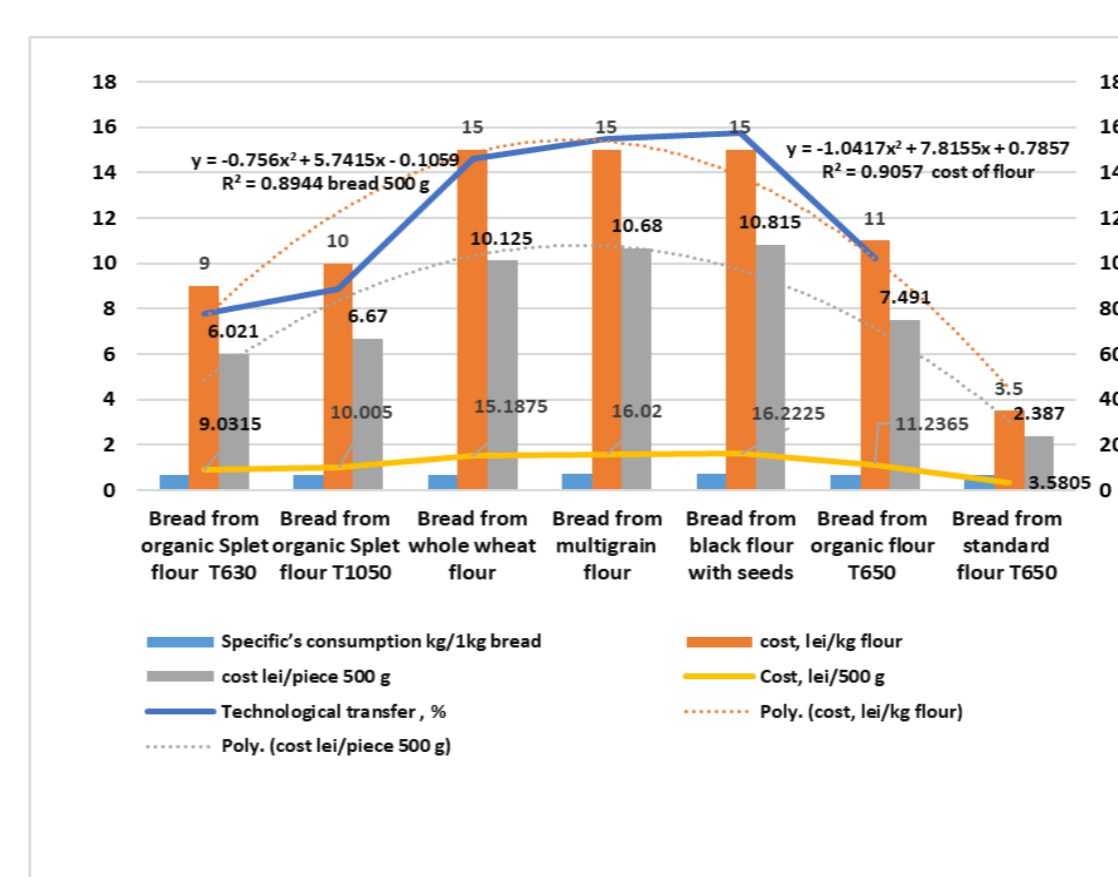


Figure 7. Dynamics of the cost of innovative bakery products obtained from the organic flours

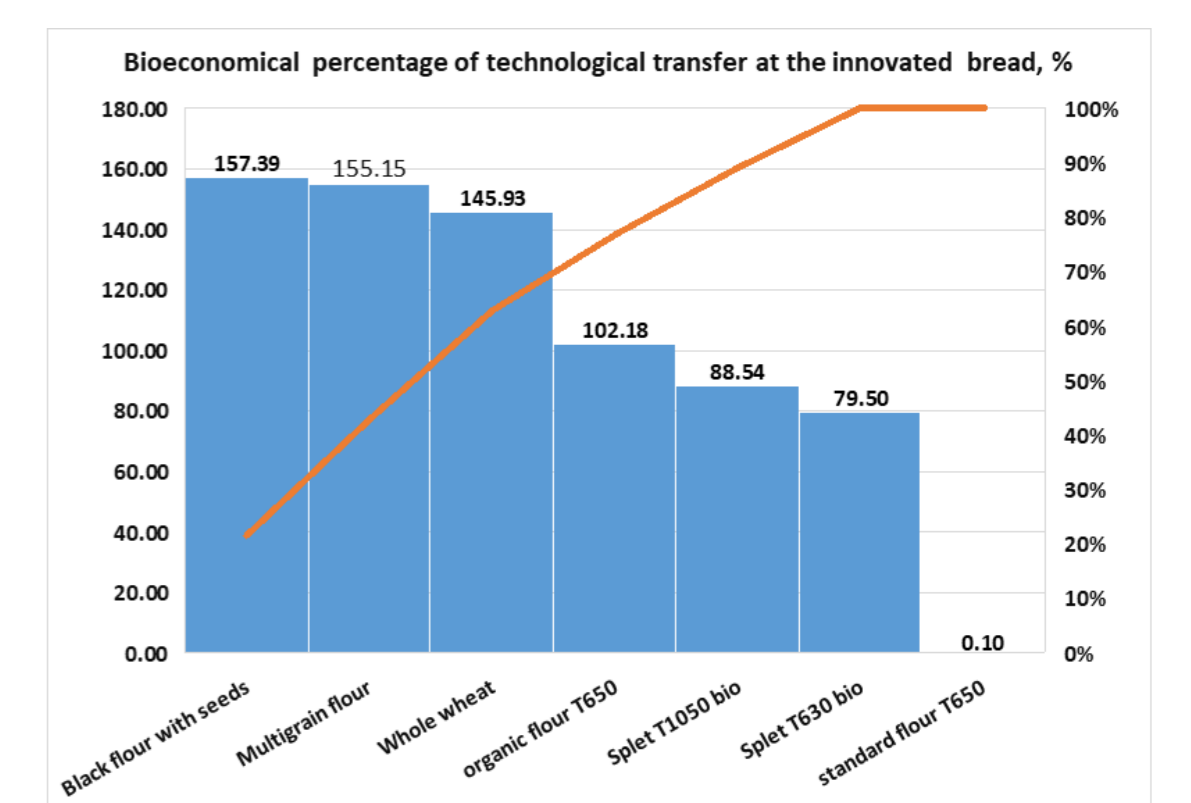


Figure 8. Bioeconomic increase of costs in the technological transfer of bio-innovative products

Conclusions

To produce organic bakery products using certified organic flours, we must accept: a significant increase in the cost of raw materials, an increase in bioeconomic and other utility consumptions in correlation with a major increase in the nutritional quality of the bread. These bakery products will have soluble fibers, mineral salts, and an optimal neutral pH index, making them the most favorable for an optimal digestion process. These qualities justify the cost increase of 79,5%.

Acknowledgement: text