

REDUCING FOOD WASTE IN SCHOOL CATERING THROUGH THE USE OF DETECTION TOOLS OF FOOD WASTE

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BACKGROUND AND AIM:

Food waste is a global issue with social, environmental, and economic impacts, occurring throughout the food chain.

This study examines food waste percentages in school canteens and explores reduction strategies.

METHODS:

Food waste percentage was analyzed in four primary school in Tuscany from October 2024 to January 2025, evaluating 600 lunches. The dietitian working for the collective catering company conducted a visual assessment during mealtime, recording data on specific forms. A dish was consumed if $\geq 50\%$ was eaten. Data, processed via software, was categorized by course, calculating average waste percentages.

RESULTS:

The food waste analysis shows significant variation across categories. Vegetable side dishes have the highest waste percentage (63.19%) (Chart n. 3), followed by fruits and desserts (40.38%) (Chart n. 4). Second courses waste is lower (36.48%) (Chart n. 2), while first courses have the least waste (24.28%) (Chart n. 1). The highest waste recipes are peas (95.83%), julienned vegetables (92.31%), whole wheat bread (89.29%) (Chart n.5), green beans (86.67%), and spinach (86.67%), indicating major vegetable waste. The analysis led to strategies for reducing food waste through education, menu optimization, personalized portioning, food storage solutions, surplus donations, and composting, promoting sustainability and efficiency in school meal programs (Table 1).

Chart 1. Food waste Percentage of First Courses

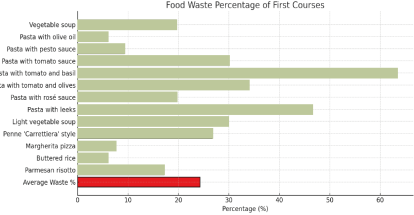


Chart 2. Food waste Percentage of Second Courses

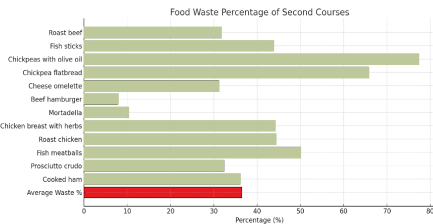


Chart 3. Food waste Percentage of Vegetable Side Dishes

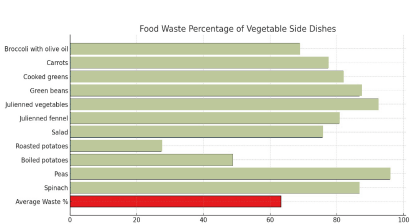


Chart 4. Food waste Percentage of Fruits and Desserts

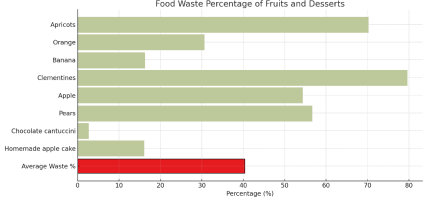
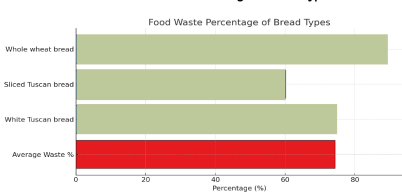


Chart 5. Food waste Percentage of Bread Types



CONCLUSIONS:

Visual assessments show vegetable side dishes as the most wasted. The dietitian plays a key role in overseeing waste monitoring, optimizing meal services, supporting policy development, and promoting educational initiatives (Graphs. 1). Integrating data-driven

insights, technological innovations, and targeted interventions can significantly reduce food waste, enhance meal quality, and encourage sustainable eating habits in schools.

GRAPHS 1.

The key role of dietitian in reducing food waste in school canteens

- Consulting on the entire meal service, ensuring nutritional quality and waste reduction
- Supervising waste monitoring, analyzing collected data to develop targeted interventions
- Supporting the drafting of tender specifications, guaranteeing compliance with dietary and quality standards
- Leading educational initiatives, raising awareness about food waste among students and school staff
- Participating in selection committees, ensuring the choice of sustainable and efficient catering services
- Promoting innovative solutions, such as personalized portioning and food redistribution programs, to improve resource efficiency and minimize waste

TABLE 1.

Waste Reduction Strategies

Category Proposed Actions

Preventive Actions

- Implementing food waste education projects for students.
- Menu optimization based on identified critical issues.

Corrective Actions

- Personalized portioning based on students' actual requests.
- Use of "lunch boxes" for uneaten food that can be safely stored.

Recovery Actions

- Donation of surplus food (in accordance with Law 116/2016).
- Composting food waste to promote sustainability.

