

# Community Supported Agriculture and Food Waste in Curitiba, Paraná

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**Abstract:** Food waste in Brazilian households amounts to approximately 8.7 million tons annually, prompting investigations into sustainable consumption practices and waste reduction. This article aims to assess the food waste patterns of consumers involved in Community Supported Agriculture (CSA) initiatives in the Central Urban Core of Curitiba, Brazil. Methodologically, this exploratory research was conducted through a survey (N = 401, n = 144). The results showed that CSA groups provide opportunities for knowledge exchange about food waste, a demand for education on sustainable consumption, and an urgent need for strategies tailored to different contexts to foster conscious and sustainable consumption practices. The conclusion is that participation in CSAs does not significantly influence consumer behavior regarding food waste, indicating the need for sustainable consumption education and context-specific solutions.

**Keywords:** Food waste; sustainable consumption; food sustainability; alternative agri-food networks; community supported agriculture.

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## Introduction

Brazil ranks among the top ten countries with the highest levels of food loss globally (FAO, 2015), reaching up to 8.7 million tons annually (Porpino *et al.*, 2018), while approximately 5.2 million Brazilians suffer from hunger (FAO, 2018). Food loss is generally linked to the production and processing stages, which predominate in developing economies. Waste at the end of the food chain (distribution, retail, and final consumption) occurs more frequently in so-called developed economies (Deliberador *et al.*, 2018).

Among the United Nations' Sustainable Development Goals (SDGs), Goal 12 aims to ensure sustainable consumption and production patterns. By 2030, its targets include implementing a ten-year framework of programs on sustainable consumption and production (Target 12.1) and halving global per capita food waste (Target 12.3). Target 12.c seeks to remove market distortions that encourage unnecessary consumption (UN, 2015).

In this context, consumers are seen as key agents at the final link of the sustainable consumption chain, playing the role of social actors with implicit responsibilities regarding sustainability. These consumers tend to recognize emerging alternative economies, even though most of their needs are met through the market economy. It is assumed that such consumers understand that the dominance of market logic in their choices may lead to the erosion of more community-oriented and solidarity-based practices (Portilho, 2005; Sampaio *et al.*, 2017; Procopiuk *et al.*, 2021), such as those seen in Alternative Agri-Food Networks (AAFNs).

AAFNs exemplify territorial socio-productive arrangements that prioritize farmers and consumers. Through Short Food Supply Chains (SFSCs), they eliminate exploitative intermediaries. These SFSCs foster the sharing of meanings related to local ecossocio-economies by enabling physical proximity and a shared worldview between consumers and producers, particularly by promoting sustainable development strategies grounded in conscious food production and consumption.

In Brazil, some SFSC models are linked to agroecological and organic food production, such as Community Supported Agriculture (CSA) initiatives. According to Blanc and Kledal (2012), in 2010, half of all certified organic sales occurred through these short chains. For instance, Paraná accounts for 18% (around 3,500) of Brazil's certified organic farmers (TECPAR, 2020), and the Metropolitan Region of Curitiba (MRC) concentrates 42% of them (Brazil, 2020).

Despite favorable conditions for production and marketing, CSA participation demands behavioral changes and meal planning to prevent food waste and uphold sustainable consumption standards. While sustainable consumers appear concerned with the social and environmental impacts of production and consumption and with constraints imposed by modern lifestyles, it remains uncertain whether they actively avoid waste during food handling and disposal.

Thus, deepening the discussion on food waste at the consumer level is valuable for developing a systemic understanding of the issue and opening paths for innovation within alternative economies. Accordingly, this article seeks to assess the domestic food

waste patterns of CSA consumers in Curitiba's Central Urban Core (CUC).

Their national and international replicability justifies the focus on CSAs as a case study, their alignment with sustainability values, and the importance of understanding food waste across different social groups. The specific case of Solidarity Baskets (SBs) was selected for its success in fostering sustainable consumption and its strong cohesion between farmers and consumers. This initiative has been developing in the MRC since 2010.

### Sustainable Consumption and Food Waste

The term “sustainable consumption” emerged in the environmental context of the 1990s, referenced in Agenda 21 and the Earth Charter of the Rio-92 Conference on the global environment. One of its early definitions describes sustainable consumption as the use of goods and services throughout their life cycles to meet current basic needs without compromising those of future generations, while improving quality of life, increasing efficiency in natural resources use, avoiding toxic inputs, and reducing waste and pollution (Ofstad *et al.*, 1994).

Sustainable consumption tends to be internalized through responsible awareness and expressed in purchasing behavior, typically reflected in adopting a “green” lifestyle. However, it is a complex challenge, as it requires overcoming the influence of marketing strategies to promote consumption. It results from actions based on ethics and responsibility, empowering selective purchasing behavior. Within this ethics of action, a sustainability-oriented paradigm may emerge by creating informational environments that clarify the transitory nature of market values and reinforce environmental awareness, deepening and strengthening reflection on food production, use, and disposal processes (Gorynska-Goldmann *et al.*, 2016).

In this paradigm, the sustainable consumer is expected to understand that their social action can influence institutional strategies that, in turn, foster collective consumer behaviors toward environmental sustainability (Sharma & Jha, 2017). Therefore, food waste stands out as a behavioral challenge due to the lack of a universally agreed-upon definition, reflecting the subjective nature of the practice. Nonetheless, this study adopts the concept of food waste as the avoidable discarding of food that is in good condition for consumption at some point before its disposal (Xue *et al.*, 2017).

Studies in industrialized countries indicate that household leftovers are the main contributors to food waste (Schmidt, 2016). A literature review by Xue *et al.* (2017) shows that most assessments based on secondary data focus on industrialized nations (e.g., the United Kingdom and the United States), generating uncertainties about the consistency of global food waste databases. One finding is that per capita household food waste increases with per capita GDP. The authors conclude that consistent studies based on primary data are urgently needed to provide solid foundations for policy development regarding food loss, waste reduction, and environmental impacts, especially in emerging economies.

Reducing food waste among those with access to food is a complex social, economic, and environmental challenge (Ponis *et al.*, 2017), as behavior leading to waste (planning,

shopping, storage, preparation, consumption, and disposal) are linked to psychological factors, social norms, and sociodemographic characteristics (Principato, 2018). One possible conclusion is that preventive behaviors and practices depend on ingenious solutions (Quested *et al.*, 2013), indicating fertile ground for consumer-driven strategies to reduce food waste during consumption (Talia *et al.*, 2019). This point in the consumption chain offers opportunities to foster significant behavioral changes (Ponis *et al.*, 2017). Still, progress depends on more in-depth knowledge about the types of food wasted, the causes, and the circumstances under which waste occurs (Aschemann-Witzel *et al.*, 2018).

A lack of planning and shopping routines has been identified as a predictor of food waste (Stefan *et al.*, 2013; Romani *et al.*, 2018). Overcoming unplanned purchases may involve fostering consumer skills and using tools to manage food efficiently (Stefan *et al.*, 2013). Educational interventions that enhance perceived consumer skills in meal planning could effectively reduce household food waste (Romani *et al.*, 2018), aligning with the broader goal of education for sustainable consumption.

A promising path to tackling food waste through behavioral, cognitive, and attitudinal change involves prioritizing educational strategies focused on real-life problems faced by consumers due to unsustainable consumption habits (Zhang *et al.*, 2018). One example is raising awareness about the fossil energy consumed, greenhouse gases emitted, and other waste generated throughout the food supply chain during production, processing, transportation, refrigeration, and food preparation, ultimately wasted by households (Schanes *et al.*, 2018).

A favorable factor is that consumers across different cultures share similar individual and collective reasons for choosing a sustainable lifestyle (Minton *et al.*, 2017). Despite the progress associated with this lifestyle, it is important to note that sustainable consumption is a multidimensional and evolving concept, and food waste is only one aspect. The ‘attitude-behavior gap’—the dissonance between intention and practice—remains a notable challenge (Signori & Forno, 2015).

The success of strategies to address complex and systemic problems appears strongly tied to changes in consumer behavior, complementing existing solutions in specific space-time contexts (Lehner *et al.*, 2016), as observed in ecossocioeconomic initiatives. These experiences usually emerge from institutional and socio-productive arrangements rooted in local territories, valuing and preserving traditions and solidarity-based social relationships. They generate work and income through more associative production models that make appropriate and sustainable use of natural resources and local human capabilities. These experiences can provide alternatives to the hegemony of market logic and consumer society in food purchasing decisions (Sampaio *et al.*, 2017). Among ecossocioeconomic models, AAFNs enable sustainable reconnection between food production and consumption.

### **Alternative Agri-Food Networks (AAFNs) in Brazil**

The emergence of a new societal paradigm, framed by the sustainability of development, has reassessed current consumption patterns and lifestyles. This has created

fertile ground for rethinking alienated and detached behaviors and for building a new subject with sustainable awareness, distancing from the logic of consumer society (Sachs & Vieira, 2007). This perspective seems to foster the growth of people engaging in food activism to achieve sustainable development, organizing themselves around organic and agroecological production, and striving to strengthen rural-urban relationships.

AAFNs have emerged as marketing models that encourage production and consumption with lower environmental impacts in this context. They promote access to alternative and territorial grounded markets for obtaining high-quality food at affordable prices (Goodman *et al.*, 2012). These networks began to emerge in the 1990s, both as a response to the weaknesses of the conventional agri-food system and as a proposal to manage sustainable food systems in the face of eroding environmental values and practices along the production chain (Michel-Villarreal *et al.*, 2019).

Brazilian AAFNs emphasize food sovereignty and security (Lamine *et al.*, 2018), which are linked to growing health and environmental sustainability concerns. They contribute to agroecological production and the expansion of organic markets. Family farming plays a leading role in this scenario, with over 17,000 organic farms nationwide, covering over one million hectares dedicated to the sustainable production of vegetables, fruits, grains, and processed foods. One of the main challenges facing organic and agroecological production today is commercialization, with price being a significant barrier to increasing consumption (SEBRAE, 2020).

AAFNs and the spread of organic and agroecological agriculture rely on SFSCs to bring farmers and consumers closer in the production and distribution chain by reducing intermediaries. This proximity has provided producers better economic returns, improved consumer access to high-quality products, and facilitated the construction of shared values and meanings beyond the commercial transaction (Renting *et al.*, 2003). SFSCs can thus be considered a marketing model based on fair and solidarity-based exchanges between producers and consumers (Darolt *et al.*, 2013).

In Brazil, organic food sales through SFSCs generally follow four typologies: direct sales, on-farm sales, agritourism, and indirect sales. CSAs are widespread across Brazil as direct sales models, prioritizing direct relationships between producers and consumers (Darolt *et al.*, 2013). In these CSAs, “the responsibilities, risks, and benefits of production are shared in solidarity” between both sides of the marketing relationship (Mira *et al.*, 2018, p. 4). The CSA model may take different forms depending on cultural diversity and economic and geographic contexts, but it shares standard features: mutual trust between farmers and consumers, advance payments, and environmental and social interests as foundations for participation (Lyons, 2003).

The CSA model practiced in Brazil involves independent civil society groups, predominantly urban, that connect with farmers to make decisions based on collectively developed operating rules. Although organizational models may vary, the following patterns are observed in most groups: direct sales, unity and cooperation among stakeholders, shared risks and benefits, alignment in production and logistics conditions, promotion of best production practices (including organic production), encouragement of sustain-

ability, reduced waste through aesthetic reevaluation of food, and guaranteed distribution of production (Junqueira & Moretti, 2018). Generally, CSAs operate through strategies based on socially and environmentally responsible consumption and aim to reconcile local contradictions and differences to maintain the integrity of the group involved in conscious production and consumption relationships.

### **Methodological Design**

This research was developed through an interpretative lens and an exploratory perspective aimed at understanding and qualifying the food waste patterns of sustainable consumers, based on variable analysis in a case study. Many published studies focusing on food waste quantification and behavioral analysis provided context to compare and discuss the empirical data collected.

### ***Contextualization of the SB Project***

The SB experience was inspired by consumer groups created in France, known as associations, pour le maintien de l'agriculture paysanne. The SB initiative in the MRC represents a CSA model created through public action to bring consumers closer to organic and agroecological farmers, thereby promoting direct food purchasing and sustainable consumption. The project originated from a partnership between the Paranaense Center for Agroecology Reference (CPRA), farmers, and consumers. Relationships among these actors are based on a collaboration between those who produce and those who consume organic and agroecological foods, with shared responsibility for production.

As of 2020, the CPRA had registered 61 CSA groups supplied by 25 farmers (CPRA, 2020). Each group was assigned to one farmer, and communication was primarily conducted via WhatsApp®. Membership in these groups was voluntary, typically based on proximity to the consumer's residence or workplace. Consumers committed to receiving pre-packed vegetable baskets at pre-established locations and times of the week. These pre-packed baskets implied agreement among group members to receive identical products and quantities, depending on seasonal availability and the farmers' production. Most baskets contained seven to ten items such as leafy greens, legumes, roots, tubers, herbs, and fruits.

Virtual and in-person meetings were essential in encouraging consumers to remain active in the CSAs. The participation of both consumers and farmers varied, with some more engaged than others. Virtual interactions served as opportunities for dialogue about sustainability and food waste, and they facilitated the exchange of information regarding food hygiene, storage, preparation, and consumption. Weekly meetings for basket pickup and annual gatherings allowed group members to visit the farmer's property for harvests and shared meals, offering moments of both work and leisure.

### **Geographic and Organic Production Context of the Study**

The MRC comprises 29 municipalities covering an area of 16,581 km<sup>2</sup>, inhabited

by around 3.2 million people (COMEC, 2020). Agricultural and organic production occurs in the region's "green belt," including municipalities surrounding Curitiba's Central Urban Core (CUC). This proximity between farmers and consumers supported 60% of the local vegetable demand, with most sales occurring in Curitiba (Melão, 2010). The area defined for this study, the CUC, is characterized by a high level of urbanization and population density across most of the 14 municipalities that form a "continuous urban area, with a similar occupation pattern and intense regional dynamics" (COMEC, 2006, p. 52).

### ***Data Collection Instrument***

There are three primary methods—each with advantages and limitations—for studying food waste: databases, self-report methods (such as surveys, interviews, and waste diaries), and direct waste measurement (Elimelech *et al.*, 2018). Surveys are a practical investigative tool as they allow for large sample sizes, are less invasive, and require less time and financial resources. However, they are subject to limitations such as response bias, individual interpretations of key concepts, and varying degrees of relevance to participants' realities.

This study employed a survey conducted via WhatsApp®, a widely used data collection tool in food waste research (Stefan *et al.*, 2013; Ponis *et al.*, 2017; Schmidt & Matthies, 2018; Zhang *et al.*, 2018; Aschemann-Witzel *et al.*, 2019). The survey occurred during the first half of 2020, and consumer participation was spontaneous and anonymous.

The target population included the largest consumer groups within the CUC. The questionnaire was administered to 29 of the 61 active groups, totaling 401 consumers. The final sample comprised 144 valid responses, representing 31.91% of the population. This sample yields a margin of error of 5.51% at a 90% confidence level for the population of 401 consumers.

The questionnaire contained 21 questions, 18 of which were multiple-choice and three were short-answer open questions. The questions were grouped into three thematic categories: socioeconomic characteristics, household consumption management, and food waste.

### ***Results and Discussion***

The results were discussed by comparing them with previous studies and statistical data from the Brazilian context of the case study.

#### ***Socioeconomic Characteristics and Household Consumption Management***

Most SB consumers surveyed lived in Curitiba (71%), confirming the association of this producer-consumer model with urban populations (Junqueira & Moretti, 2018). Women made up 80% of respondents, which is consistent with findings from Porto and Nordi (2019), Meireles *et al.* (2016), and Souza and Moraes Filho (2017). This female

predominance may reflect the traditional link between responsibility for food provision and concerns about food safety, quality, and family health.

The predominant age group among basket consumers was 31–42 years (41%), suggesting that age may influence the appreciation of organic and agroecological products. Older individuals often show greater health concerns, and the higher income and purchasing power typical of this age group may also facilitate the purchase of higher-priced organic goods.

Families consuming the baskets generally reported high monthly incomes relative to the regional standard: nearly 80% earned more than five minimum wages, and 41% earned more than eight. According to IBGE (2010) data, only 3% of families in Curitiba reached this income level. Meireles *et al.* (2016) also found that greater purchasing power is associated with a preference for product quality over price.

Nonetheless, 4% of lower-income families in the sample sought organic foods, reflecting findings by Eberle *et al.* (2019) in other contexts, such as organic stores, farmers' markets, and universities. High prices may hinder broader access to these products. A study conducted in Campinas/SP (Watanabe *et al.*, 2020) found that organic products were more expensive in supermarkets but less expensive or comparable to conventional products in street markets.

The most common household size was four people. Regarding monthly food expenditure, 43% reported spending between R\$600 and R\$1,000—of these, 18% were families of four and 13% were families of two. An additional 23% was spent up to R\$500, mainly on two-person households. A further 8% reported spending between R\$1,100 and R\$1,500, generally among three- or four-person families.

The average monthly food expenditure among SB consumers was R\$1,204.54. In contrast, the national average for urban household food spending in 2017–2018 was R\$486.39 for three-person households (adjusted for 8% inflation from January 2018 to February 2020) (IBGE, 2019). Thus, SB households spent more than twice the national average. Among SB consumers in higher-income groups, with households averaging 3.7 people, 37% reported monthly food expenditures of R\$1,025.48.

These findings align with those reported by Storch *et al.* (2003), Souza and Moraes Filho (2017), and Junqueira and Moretti (2018), confirming that CSAs continue to attract well-educated and affluent consumers primarily. However, efforts are underway to change this scenario by reducing prices by eliminating or reducing intermediaries. A study conducted in Florianópolis/SC comparing prices across different marketing models found that average prices per kilo were R\$23 in supermarkets, R\$13 in specialty stores, R\$10 in direct-from-producer markets, and just R\$6 in closed-basket CSA models such as Responsible Consumption Cells. The latter offered significantly lower prices (Grade & Mergen, 2018).

### **Food Waste**

Porpino *et al.* (2018) estimated that the average annual food waste per Brazilian



is 41.6 kg—nearly half the 82 kg generated by a German citizen (Schmidt, 2016) and about three times more than a Chinese citizen, who wastes 16 kg (Zhang *et al.*, 2018).

Survey data showed that over half (53%) of respondents waste food daily, mainly cooked leftovers (34%), parts of raw vegetables (e.g., peels and wilted leaves) (31%), and spoiled food (31%). These findings align with Porpino *et al.*'s (2018) conclusion that part of Brazil's food waste results from failing to reuse leftovers. However, 88% of respondents expressed a willingness to change this behavior, emphasizing the need to reconsider food reuse.

Regarding the consumption of basket products, 50% stated they consume all the contents, 42% reported wasting some items, and 8% donated their surplus to avoid waste. Promoting food donations may serve as a viable strategy for waste reduction. Another finding was that 51% of respondents do not use food in its entirety, with only 26% habitually consuming all parts of vegetables.

Consumers expressed discomfort with food waste, with 68% reporting they try to minimize it as much as possible and 30% wanting to change their habits. A study in rural Italy found that 26% of respondents did not perceive household food waste as a problem. However, once aware of the impacts, many expressed their intent to change their behavior. About 29% saw food waste as a serious planetary issue and actively sought to avoid it. On the other hand, 46% were unaware of the problem or its consequences, discarding edible food without feeling responsible (Talía *et al.*, 2019).

Food waste remains a widespread issue, even among SB consumers, who are relatively privileged in income, education, and awareness of sustainable consumption. The scale of the problem is similar to that seen in the general population. Aschemann-Witzel *et al.* (2018) studied Uruguay and found that higher socioeconomic levels increase the likelihood of wasting fresh products. The most commonly wasted items were leftovers, vegetables, and fruits, similar to the present study.

Despite the persistence of food waste, consumers demonstrated awareness of the need to prevent and rethink it, indicating significant consciousness and potential for behavioral change. Graham-Rowe *et al.* (2015) and Stefan *et al.* (2013) also observed a relationship between the intention to reduce food waste and actual reductions. However, it is essential to note that intention does not always translate into action, as behavior is also influenced by factors such as self-identity and anticipated regret (Graham-Rowe *et al.*, 2015).

Domestic food routines—such as checking pantry inventories, making shopping lists, planning meals, and reusing leftovers—are essential for reducing waste (Stancu *et al.*, 2016). Among SB consumers, 75% reported using shopping lists, and 62% planned their meals. However, these practices appeared only moderately effective: 37% of those who made lists and 32% who planned meals claimed they did not waste food.

The leading causes of waste identified by SB consumers included forgetting food in the pantry or refrigerator (23%), difficulty preparing certain basket items (20%), lack of planning (18%), and absence of a kitchen routine (17%). Other contributing factors included irregular mealtimes (13%) and a preference for fresh foods (3%). Additional

sources of waste mentioned were unexpected events, lack of time, children not finishing meals, poor quality of produce, and small household sizes.

Since sustainable consumption involves the generation and disposal of waste, the study assessed how consumers manage food residues. Results indicated that 23% composted food scraps, 5% buried them, and 5% used them to feed animals. Despite 55% disposing of waste in regular trash, 80% expressed interest in learning more about composting, suggesting potential for more sustainable practices. Porpino *et al.* (2018, p. 61) noted that uneaten food adds pressure to Brazil's solid waste disposal systems, with little public awareness of its contribution to broader environmental issues, such as greenhouse gas emissions.

The study found strong interaction between producers and consumers in the SB initiative. About 56% of respondents said they knew and regularly interacted with the farmers; 26% had occasional contact; and 17% had no personal relationship. Participation in such initiatives fosters exchanges and learning opportunities, promoting conviviality and greater commitment to the project. However, the length of the involvement did not appear to influence food waste behavior: 56% of those involved for less than one year reported wasting food, compared to 45% of those involved for more than a year. These results underscore the need for CSAs to assume a more proactive educational role in shaping sustainable consumer practices.

### *From Individual to Collective: The 'Attitude-Behavior Gap' and Waste*

Regarding consumption, the Brazilian reality has unique features, as Portilho (2020, p. 435) notes: consumption as a political action by individual market consumers “does not seem to be the main repertoire of food activism movements in the region, often being secondary to institutional actions within the State.” The AAFNs that have emerged in Brazil over the past decade have a collective character—they are “individual actions collectivized,” a term used by Monticelli and Della Porta (2019)—and are sometimes supported by the State, as is the case in this study, with the initiative backed by CPRA. Consequently, tackling the challenges of food waste in Brazil also requires promoting collective approaches that can inspire public policy.

The results highlight the gap between stated sustainable consumption intentions and everyday practices, echoing Portilho's (2020) observation that political engagement may be lost during daily routines. Participation in other groups focused on food waste or engagement in multiple fronts of action may strengthen commitment to the cause. Suppose CSs integrate food waste into their core discussions and activities. In that case, new strategies may emerge to address the issue and foster tacit agreements that build shared meaning and collective responsibility, even if implicit. Social and collective actions can help bridge the ‘attitude-behavior gap’.

The literature highlights specific strategies, such as using mobile applications to share surplus food and the role of food banks (Costa, 2021; Hehnke *et al.*, 2021), both of which have demonstrated positive outcomes, though challenges persist. For instance,

Garcia *et al.* (2021) identified limited institutional support from public authorities as a barrier to the consolidation of such initiatives.

Public policies regulating food donations can encourage broader engagement from other societal actors, such as restaurants and supermarkets, in anti-waste initiatives. Additionally, when considering the entire food supply chain, policies supporting direct sales and the development of local markets, such as SFSCs, can help shorten distribution channels and reduce losses related to food transportation (Balaji & Arshinder, 2016).

## Conclusion

The findings enabled a deeper understanding and qualification of food waste patterns among sustainable consumers participating in the SBs in Curitiba's Central Urban Core. The typical consumer profile was a woman between 31 and 42, with an income equal to or above nine minimum wages, and living in a four-person household. This profile aligns with that identified in previous studies on food waste. Reported per capita food expenditures ranged from R\$100 to R\$500, though not always consistent with the income levels declared. The analysis revealed an apparent disconnect between conscious practices, such as making shopping lists and planning meals, and actual reductions in food waste, as only a minority of those who adopted such practices reported not wasting food. Reported causes, including forgetting food, difficulties in preparation, and lack of a structured kitchen routine, suggest that practical and behavioral obstacles underlie the issue.

The results confirm previous findings on food waste but add value by analyzing a group of sustainable consumers. Waste remains a widespread issue, with a magnitude comparable to that of the general population.

Awareness of food waste is evident in the high proportion (88%) of respondents willing to change their eating habits, suggesting potential for positive behavioral change. However, intentions do not always translate into action, highlighting the complexity of effectively transforming attitudes. Encouraging practices like reusing leftovers (cooked or not), paying attention to storage time, and donating surplus products can help reduce waste. The evaluation of waste disposal also reveals considerable openness to sustainable practices such as composting, reinforcing the potential for environmentally friendly alternatives.

As CSAs foster sustainable consumption practices, expanding and consolidating such strategies could lead to significant transformations in agri-food production and an expansion of the sustainable consumer market. The interaction between producers and consumers within CSAs represents a key strength, as these spaces provide access to sustainable products and fulfill an educational function by fostering discussions about food waste and enabling knowledge sharing among participants. Nevertheless, the findings indicate that a more proactive and structured educational effort is needed to influence consumer behavior effectively, as the duration of participation in CSAs did not significantly impact waste habits.

The conclusions point to several key implications. There is fertile ground for

initiatives like SBs to develop integrated strategies to inform and inspire public policies. Recognizing the gap between intentions and behavior is essential: although behavioral barriers persist, there is an apparent willingness to change. Given their collaborative and dynamic nature, CSAs can support communities in incorporating food waste reduction practices. As this is a broader societal challenge, public institutions are expected to integrate consumption-related themes into formal and informal education, thereby addressing one of the root causes of waste—consumerism.

Ultimately, the contradiction between the expectations surrounding sustainable consumers and their actual food waste behaviors highlights the complexity of pro-environmental actions, which may generate a sense of frustration. Nonetheless, the observed shift in awareness represents a meaningful step in a broader socio-environmental awakening. Accordingly, three key demands emerge: (1) education for sustainable consumption, to prevent it from becoming merely rhetorical; (2) continued research on sustainable consumption, taking into account the multiple factors identified here and in previous studies; and (3) the development of context-specific strategies to strengthen sustainable practices. While food waste is a generalized issue, overcoming it will require more than generalized solutions.

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The datasets related to this article will be made available upon request to the corresponding author.

# Comunidade que Sustenta a Agricultura e o desperdício de alimentos em Curitiba, Paraná

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**Resumo:** O objetivo deste artigo é qualificar os padrões de desperdício de alimentos dos consumidores das Comunidades que Sustentam a Agricultura (CSA) no Centro Urbano Central de Curitiba, Brasil. Metodologicamente, trata-se de uma pesquisa exploratória realizada por meio de levantamento (N = 401, n = 144). Os resultados mostraram que as CSA facilitam o intercâmbio de conhecimentos sobre desperdício; há demandas por educação para o consumo sustentável; e uma necessidade urgente de estratégias ajustadas a diferentes contextos para aprimorar práticas de consumo consciente de forma sustentável. Conclui-se que a participação dos consumidores nas CSA ainda não interfere em seu comportamento em relação ao desperdício de alimentos, sendo necessária educação para o consumo sustentável e soluções não generalizadas.

**Palavras-chave:** Desperdício de alimentos; consumo sustentável; sustentabilidade alimentar; redes agroalimentares alternativas; agricultura sustentada pela comunidade.

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# Agricultura Sostenida por la Comunidad y el desperdicio de alimentos en Curitiba, Paraná

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**Resumen:** El objetivo de este artículo es calificar los patrones de desperdicio de alimentos de los consumidores de las Comunidades que Sustentan la Agricultura (CSA) en el Centro Urbano Central de Curitiba, Brasil. Metodológicamente es una investigación exploratoria realizada con encuesta ( $N = 401$ ,  $n = 144$ ). Los resultados mostraron que las CSA facilitan el intercambio de conocimientos sobre desperdicio; hay demandas de educación para el consumo sostenible; y una necesidad urgente de estrategias ajustadas a diferentes contextos para mejorar las prácticas de consumo consciente de manera sostenible. La conclusión es que la participación de los consumidores en las CSA aún no interfiere en su comportamiento de desperdicio de alimentos, requiriendo educación para el consumo sustentable y soluciones no generalizadas.

**Palabras-clave:** Desperdicio de alimentos; consumo sostenible; sostenibilidad alimentaria; redes agroalimentarias alternativas; agricultura sostenida por la comunidad.

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