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SSPICEIT!
Sustainability Skills Program for International Catering operators and Entrepreneurs through Integrated Training

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Submodule n°7: Managing Food Waste and Using a Technical Recipe Sheet

THEMATIC AREA	**How to implement circular practices in one's business**
SUB AREA OF REFERENCE	*Sustainable food*
HOURS	6
LEARNING OBJECTIVES	
By learning this module, the student should be able to: **1. Identify and implement practices coherent with sustainable waste management.** **2. Adopt sustainable practices in one´s job.**	
LEARNING ACTIVITIES	
Theoretical	**Practical**
Exposure of the contents through resources like PowerPoint and apps created specifically for this course.	Exercises, discussions, and practice tasks for the students to measure the knowledge acquired during the module.

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CONTENT

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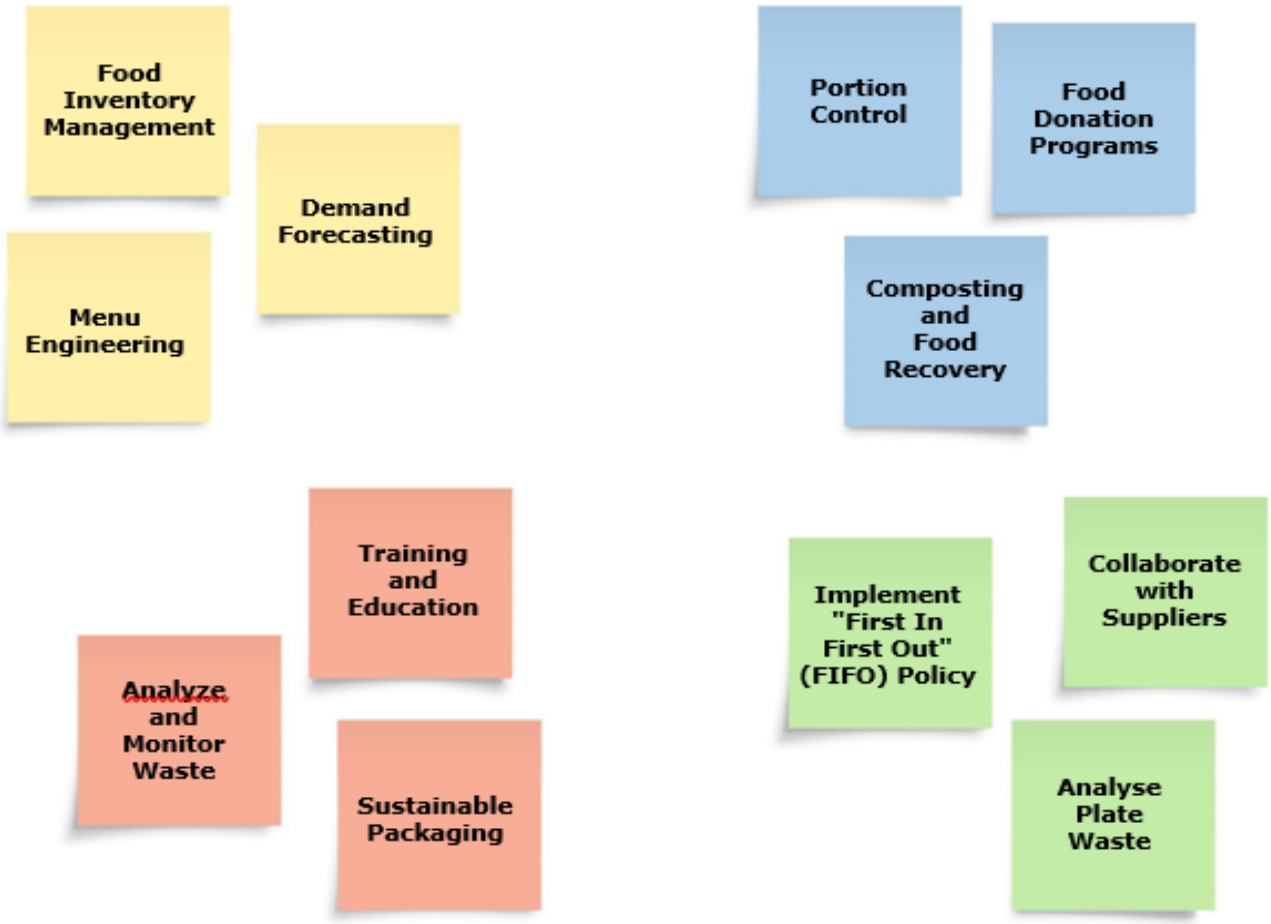
SUBMODULE 7: Managing Food Waste and Using a Technical Recipe Sheet

1. Minimizing food waste

Minimizing food waste in the food industry requires a comprehensive and systematic approach. Here are some strategies that businesses can implement to reduce food waste effectively

Figure 1: Strategies for minimizing food waste.



Created with Lucidchart. (https://www.lucidchart.com)

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2. Technical recipe sheet

The **technical recipe sheet** it is one of the best tools to control the quantity, as well as the quality, of the kitchen's production. With this tool we can learn about the food cost, waste, portion control, sales ratios, etc… It consists of standards and procedures to be followed in the preparation and service of each menu item. Recipe standardization is the key to menu consistency and operational success.

It is a fundamental instrument in any kitchen, and the greater the degree of precision, the easier it tends to be to manage the business. In general, technical recipe sheets must contain the following information:

- Item name.
- Number of Doses Served.
- Serving Quantity.
- List of Ingredients.
- Preparation and Methods.
- Cooking Time and Temperature.
- Special Instructions if necessary.
- Cost of Revenue.

Reasons for implementing the technical sheet system with standardized recipes include:

- **Controlled purchases**, without the technical sheet it would be impossible to manage meal costs and stock.
- **If there is any type of diet control**, meal providers must know the nature of the ingredients and the exact amount of nutrients in each menu item.
- **Meal suppliers must be able to** inform diners about the type and quantity of ingredients in their recipes.
- **Comparing the quantity** of food used with the sales revenue would be impossible without the technical sheet.
- **Calculating the price on the menu** in relation to the cost of the recipe would be impossible without the technical sheet.
- **New kitchen employees could not be trained without the technical sheet**.

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- **The computerization of the total operation of the restaurant** or provision of meals should be impossible without the technical data sheet elements with standardized recipes implemented.

For a culinary preparation to be carried out successfully, several factors are important, such as the type of utensils, temperature, and preparation time, in addition to the quality of the ingredients. The reproduction of these conditions will ensure that similar results are obtained with each repetition of the recipe or protocol, even when prepared several times and by different cookers. The writing of a recipe must contain clear and precise information, to enable its reproducibility. When executing a recipe, it is essential that the ingredients are measured accurately. The technical recipe sheets are important tools for determining the cost of dishes on the menu, as it is based on the premise that the cost of preparing the recipe is determined and is not a variable. We can start from a variable that is what the average expenditure of a customer should be on a meal for this restaurant, located in this location, serving this type of food, in this type of environment. This way, you can arrive at a value for the dish, and these calculate your contribution margin. As a rough example, the cost of food when preparing the recipe obtained from the technical sheet and cost sheet must be between 15% and 25% of the price of the dish on the menu. This means that, if the price of a certain dish on the menu is €20.00, the cost of raw materials should not exceed €5.00.

3. How to use a technical recipe sheet:

The technical recipe sheet is made up of a series of data that must be calculated using a series of formulas (most of them are simple rules of three), which will give us the result of the data we want to obtain to know the costs, benefits and up to the sales price of a recipe. Therefore, we must familiarize ourselves with a series of criteria and nomenclatures before starting to create a technical sheet.

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Nomenclature	
Reference:	Reference corresponding to the internal code of the technical sheet (Example: FISH001 for the first fish technical sheet)
Type:	Identification of the type of dish (Appetizer, Starter, Main Course, Dessert, etc.)
Name:	Internal name assigned to the dish
Number of doses:	Yield in portions of the dish
Ingredients:	Description of the different ingredients that make up the dish
Measure:	Unit for measuring each ingredient (must always be Kg., Lt. or Unit.)
N.W.:	Net Weight (Example: the weight of the already peeled potato)
C.F.:	Correction Factor (numerical value that determines the amount of waste. Example: The value that represents the weight of the potato peel)
G.W.:	Gross Weight (Example: the weight of the potato with the skin)
P.C.:	Production Coefficient (percentage that represents the weight of each ingredient in the total weight of the recipe)
Unit P.:	Unit Price (Price per Kg., Lt. or Unit of each ingredient. Example: Potato - €1.10 for each Kg.)
Total P.:	Total Price (Price referring to the necessary quantities of each ingredient. Example: If we need 2 kg of potatoes, the total P. will be €2.20)
C.C.:	Contribution Coefficient (percentage that represents the cost of each ingredient in the total cost of the recipe)
Total Cost:	Sum of the total price of all ingredients
Production:	Total quantity, in kg, of the sum of the net quantities of all ingredients used in the recipe
Cost Kg Prod.:	Cost associated with the production of 1 kg of the prepared recipe
Cooking Index:	Cooking Index (Value number that represents the amount of weight lost while cooking the recipe)
Net Production:	Net Production (Quantity, in kg, resulting from cooking the recipe)
Per Capita:	Per Capita (Weight corresponding to each of the doses into which the recipe is divided)

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Unit Cost:	Cost per Dose (Cost corresponding to each of the doses resulting from the preparation of the recipe)
Net S.P.:	Net Sales Price (Sales value without VAT assigned to each dose)
VAT:	Monetary value of VAT attributed to each dose
Cont. Margin:	Contribution Margin (Value in € corresponds to the benefit obtained from the sale of the dish. Difference between the Unit Cost and the Net S.P.)
Ratio:	Percentage corresponding to the value of the Contribution Margin
Presentation:	Indication of how to serve the dish (In an individual portion, on a platter, on a buffet tray, etc.)
Temperature and cooking time:	Temperature and cooking time (approximate indication of these values considering the cooking methods applied)
Packaging and expiration date:	How and for how long the recipe can be stored (Example: In a vacuum bag / 7 days)
Storage Temperature:	Considering the packaging and expiration date of the recipe, at what temperature should we store it? (Example: +3 ºC)
Allergies:	Considering the ingredients that make up the recipe, what are the main potential allergens? (Lactose, gluten, shellfish, eggs, etc.)
Photograph of the dish:	Image of the final dish for guidance on the plating to be carried out to always have the same presentation to the customer
Description and preparation method:	Explanation of the steps to be taken for the mise-en-place, preparation, and plating of the recipe
Equipment:	Describe the main equipment and utensils needed to prepare the recipe (Example: cutting board, chef's knife, tray, stove, oven, spatula, etc.)

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Reference:	SOUPS0001	Type:	Soups and Starters
Name:	Quick mushroom noodle soup		
		Number of doses:	2

Ingredients	Measure	N.W.	C.F.	G.W.	P.C.	Unit P.	Total P.	C.C.
Sesame oil	Lt.	0,020	1	0,02	1%	€19,00	€0,38	7%
Mixed mushrooms	Kg.	0,200	1	0,2	14%	€14,95	€2,99	52%
Garlic clove	Kg.	0,015	1	0,015	1%	€5,48	€0,08	1%
Chilli flakes	Enough							
Fresh vegetable or chicken stock	Kg.	0,800	1	0,8	57%	€0,57	€0,46	8%
Udon noodles	Kg.	0,200	1	0,2	14%	€5,60	€1,12	19%
Pak choi	Kg.	0,150	1	0,15	11%	€3,99	€0,60	10%
Soy sauce	Enough		1					
Lime juice	Enough		1					
Crispy chilli in oil	Kg.	0,005	1	0,005	1%	€19,95	€0,10	3%
					Total Cost		€5,73	

Production	1,390	Cooking Index	0,7	Per Capita	0,487	VAT	€3,29	Contr. Margin	€8,58
Cost Kg Prod.	€4,12	Net Production	0,973	Unit Cost	€2,86	Net S.P.	€11,44	Ratio	75%

Presentation	Serve in individual bowl
Temperature and cooking time	Boil 100 ºC per 10 minutes
Packaging and expiration date	Consume immediately
Storage temperature	----------
Allergies	Gluten

Description and preparation method:

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Step 1: Heat the sesame oil in a large, deep saucepan over a medium heat and fry the mushrooms for 3-4 mins until evenly coloured. Add the garlic and chilli flakes and cook for another minute. **Step 2:** Add the stock (or crumble in the stock cube and add 400ml water) and bring to the boil. Tip in the noodles and pak-choi, reduce the heat and simmer for 3-4 mins until the noodles are warmed through. Ladle the soup into a bowl and season with a splash of soy sauce, squeeze of lime juice and the crispy chilli in oil. Serve immediately.
Equipment: Cutting board, chef's knife, tray, pan with lid, spoon, ladle, bowl.

Let's analyse our technical recipe sheet and know how to calculate the different content of this tool.

In the beginning, we will find the following designations:

- **G.W.**: Gross Weight, how the ingredient is received in our kitchen. Before it was fixed. A whole salmon, for example, from which we will have to remove the scales, fins, guts, head, and bones (waste).
- **N.W.**: Net Weight, the quantity of salmon that remains after we harvest it. The quantity that will give us income to prepare the recipe. This income will be represented by a percentage, which will become a standard for the calculations of the restaurant's technical data sheets.
- **C.F.**: Correction Factor, the difference between the gross weight and the net weight.

For example, if we buy 5 kg of rump (G.W.), and clean it to prepare it for later cooking, it will weigh approximately 4,5 kg (N.W.), so the rump correction factor will be (4,5 divided by 5 = 0.90) 90% profit.

C.F. = N.W. / G.W.

Ingredients	Measure	N.W.	C.F.	G.W.
Mixed mushrooms	**Kg.**	**0,200**	**1**	**0,2**

C.F.= 0,200/0,200 = 1

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This means that there are not leftovers in the case of the mixed mushrooms.

We will then always use this correction factor value to calculate the quantities of ingredients needed for each recipe. If we are going to prepare a recipe with rump for 50 people, we will have to do the math considering the amount of already cleaned meat that we are going to serve in each serving. Let us imagine that the total will be 7 kg, but we must take the correction factor into account before buying it. With the technical sheet we will be able to know the gross quantity required, which will be calculated as follows: 90% = 7/0.90 = 7.8 kg. Using this formula, we must buy 7.8 kg of rump to have the 7 kg we need to serve 50 people.

From the technical recipe sheet, we can see that the cost price of this recipe for 2 doses is €5,73. To arrive at this value, we must check the Total P. (Total Price) of each ingredient and then add the value of all the necessary ingredients, to do this we make a simple rule of three with the Unit P. (Unit Price) of each ingredient, multiplied by the G.W. (Gross Weigh) and dividing the result by 1 (kilo/litre equivalence). The formula should be as follows:

Total P. = (G.W. x Unit P.)/1

Ingredients	Measure	G.W.	Unit P.	Total P.
Mixed mushrooms	Kg.	0,2	€14,95	€2,99

Total P. = (0,2 * 14,95) / 1 =2,99€

But the purpose of the technical recipe sheet is none other than to determine the costs of each portion and the corresponding sales price to obtain a profit from preparing the recipe. To verify this data, we must make some more calculations regarding the T.C. (total cost), the U.C. (unit cost), the Contribution Margin, the VAT. (In the case of Portugal, it is 23%) and finally the Recommend Sell Price (obtained from the sum of the U.C. plus the Contr. Margin plus the VAT. The T.C. (Total Cost) of the recipe we will

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obtain by adding the unit prices of the ingredients that make up the dish, the formula will be as follows:

Total Cost = Sum of Total P. of each ingredient

In our example the result is 5,73€

We also need to look and calculate two special information, who are the P.C. (Production Coefficient) and the C.C. (Contribution Coefficient). In these columns we can see the importance of each ingredient on the recipe. For example, on the P.C. is important to know which is the main ingredient of the dish, because it need to have the high percentage of weigh compared to the rest of the ingredients. In the case of the C.C., we will know who the most expensive ingredients of our dish are, and if we need to change something at that point to get a much efficient dish in terms of costs… To calculate this information, we need to do the next calculations:

P.C. = (G.W. x 100%) / Sum of all G.W.

C.C. = (Total P. x 100%) / Total Cost

Ingredients	Measure	G.W.	P.C.	Unit P.	Total P.	C.C.
Mixed mushrooms	Kg.	0,2	14%	€14,95	€2,99	52%

P.C. = (0,2 X 100%) / 1390 = 14%

C.C. (2,99 X 100%) / 5,73 = 52%

Now we need to look to the Production, the Cooking Index, the Net Production, and the Per Capita information. This is a crucial point to value if our technical recipe sheet is well calculated and balanced between ingredients and doses. We should use a Food Portions guide to verify this balance.

The Production should be calculated by summing the NET Weigh of all ingredients:

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Production = Sum of N.W.

In our example the result is 1,390 Kg.

The Cooking Index is something a little bit difficult to calculate, because involves measuring the ingredients before and after cooking the dish. But is a particularly important information because we can see the Net Production thanks of that calculation:

Cooking Index = Net Production / Production

In our example we need to calculate the cooking index the first time we do the recipe. We need to measure the net production (the amount of the N.W.) and then to measure the result after cooking:

Cooking Index = 0,973 / 1,390 = 0,7

By calculating the Cooking Index one time, we can use the result for every time we do this recipe, no matter if we make 2 our 200 doses of the dish.

As a result of that calculation, we already know the Net Production every time, by multiplying the Production and the Cooking Index:

Production	1,390	Cooking Index	0,7	Per Capita	0,487	VAT	€3,29	Contr. Margin	€8,58
Cost Kg Prod.	€4,12	Net Production	0,973	Unit Cost	€2,86	Net S.P.	€11,44	Ratio	75%

Net Production = Production x Cooking Index

Net Production = 1,390 x 0,7 = 0,973

Now we can know the weight of the recipe that goes for every dose, by dividing between Net Production and Number of Doses:

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Per Capita = Net Production / Number of Doses

Per Capita = 0,973 / 2 = 0,487

The next step is to calculate the Unit Cost (cost of a single dose). To do this, we will divide the T.C. by the Number of Doses:

U.C. = T.C. / (Number of Doses)

U.C. = 5,73 / 2 = 2,86€

Now we are going to calculate the Net S.P., the needed sold price without VAT of our dish. This calculation should be done by defining the % of the cost of the ingredients that we want to apply. This should be determined according to the style and kind of service of our restaurant. We are going to consider 25%:

Net S.P. = (U.C. x 100%) / 25%

Net S.P. = (2,86 x 100%) / 25% = 11,44€

Once we reach this point, we must determine the percentage of Ratio that we want to obtain. This percentage will vary depending on the type of establishment, the type of service and cuisine, as well as the average price of our menu. Normally, the Ratio sought is around 60-75%, but there will be cases in which the margin will be higher, and others in which it will be lower, mainly due to raw material prices. Since we want to determine the Ratio percentage for our menu, we must carry out the following formula, to obtain the result in money, in the case of this recipe we will aim for a Ratio around 75%:

Ratio = ((Net S.P. – Unit Cost) x 100)/Net S.P.

Ratio = ((11,44 – 2,86) x 100) / 11,44) = 75%

According to the ratio, we can calculate the Contribution Margin by calculating the difference between the Net. S.P. and the Unit Cost:

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Cont. Margin = Net. S.P. – Unit Cost

Cont. Margin = 11,44 – 2,86 = 8,58€

Which is the NET profit that we obtain by selling or noodles at the recommended price of the technical recipe sheet.

Now, all we need to do is calculate the VAT (23% currently in Portugal) and the R.R.P. (Recommended Retail Price for each dish). In the case of VAT, just sum the U.C. plus the Net S.P. and do a simple rule of three with the VAT of your country, for our example is 23%:

VAT = ((U.C. + Net S.P). x 23%) / 100%

VAT = ((2,86 + 11,44) x 23%) / 100% = 3,29€

The Recommended Retail Price results from the Net S.P. plus the VAT. This value that we will obtain will be, as I said, a symbolic value, as the final value to be attributed to the price of this dish will depend on other factors, such as the average price of the menu, the type of service, the decoration of the establishment, etc.

R.R.P. = Unit Cost + Net S.P. + VAT

R.R.P. = 2,86 + 11,44 + 3,29 = 17,59€

According to our calculations, we should sell our Quick mushroom noodle soup at a price of 17,59€ to have the best profit with it attempting to our expectations and needs.

Thanks to that calculations we can know the recommended sale price of our dish, plus any other information, and the amount of food waste on our recipe, so we can adopt strategies to minimize the waste and reuse it on the proper way.

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4. Strategies for reusing leftovers.

When we cook, we usually have leftovers. It is especially important to know what we can do to reuse it in the right way to take a profit from them. So, reusing leftovers is an excellent way to minimize food waste and get creative with your cooking. Here are some examples of strategies for reusing leftovers:

Reinvent as New Meals:

- Turn leftover roasted vegetables into a frittata or quiche.
- Transform cooked meats (e.g., chicken, beef, or pork) into sandwiches, wraps, or tacos.
- Use leftover rice or pasta to make a stir-fry or fried rice.
- Blend leftover fruits into smoothies or use them as toppings for yogurt or oatmeal.

Figure 2: Imagem de Kamram Aydinov on Freepik.

Soups and Stews:

- Combine leftover vegetables, meat, or grains to make hearty soups or stews.
- Use broth or stock made from meat or vegetable scraps to enhance the flavour.

Figure 3: Imagem of Vecstock on Freepik

Leftover Salad:

- Repurpose leftover salad as a base for wraps or sandwiches.
- Blend salad ingredients into a refreshing smoothie with added fruits and yogurt.

Figure 4: Image of Stockking from Freepik

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Pizza or Flatbreads:

- Top leftover vegetables, meats, or cheeses on pizza dough or flatbreads for a quick and easy meal.

Figure 5: Image of 8photo from Feepik

Casseroles and Bakes:

- Combine leftover meats, vegetables, and grains in a casserole or baked dish with sauce or cheese.

Figure 6: Image of Stockgiu from Freepik

Leftover Grains:

- Use leftover grains like rice, quinoa, or couscous in salads, soups, or stuffed peppers.

Figure 7: Image of Vecstock from Freepik

Croutons and Breadcrumbs:

- Dry out leftover bread to make homemade croutons or breadcrumbs to use in salads or as toppings.

Figure 8: Image from Freepik

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Leftover Pasta:

- Turn left over pasta into a cold pasta salad with added vegetables, herbs, and dressing.
- Pan-fry or bake leftover pasta with cheese for a crispy pasta dish.

Figure 9: Image from Freepik

Omelettes and Frittatas:

- Incorporate leftover vegetables, meats, and cheeses into omelettes or frittatas for a hearty breakfast or lunch.

Figure 10: Image from Freepik

Leftover Breads:

- Use stale bread for bread pudding, French toast, or panzanella salad.

Figure 11: Image of Vecstock from Freepik

Remember to store leftovers properly in the refrigerator or freezer to maintain their quality and safety for reuse. By getting creative with your leftovers, you can reduce food waste and enjoy delicious meals without letting any ingredients go to waste. Those leftovers should be used on the daily menus; the Chef's suggestions and recommendations or even on the aperitives when the clients arrive.

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5. Composting for nutrient recycling

Creating compost in a professional kitchen, especially in a sustainable restaurant, can be an effective way to recycle food scraps and organic waste.

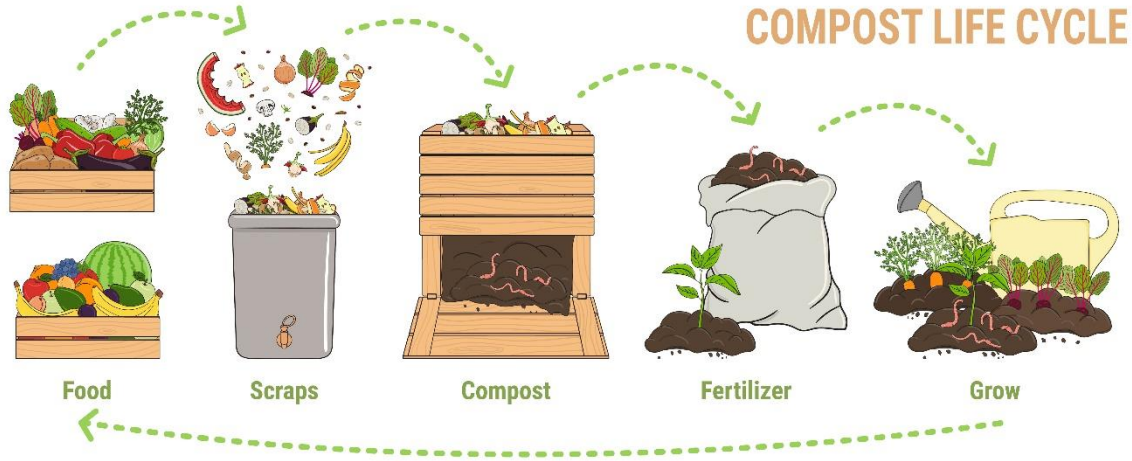

Figure 12: Sequence of composting. Source: https://parkseed.com/

Here are some examples of how to make compost in a sustainable restaurant setting:

Separate Food Scraps: Set up designated bins or containers in the kitchen for food scraps and organic waste. Educate kitchen staff about what can be composted, such as fruit and vegetable peels, coffee grounds, eggshells, and non-meat food scraps.

Composting Stations: Place composting stations conveniently throughout the kitchen to encourage staff to use them. Consider having stations near food preparation areas, dishwashing stations, and where food waste is most likely to be generated.

Use Biodegradable Containers: Serve takeout or to-go orders in biodegradable or compostable containers made from materials like plant-based plastics or compostable paper.

Compostable Packaging: Ensure that any compostable packaging used in the restaurant is certified compostable and can be included in the composting process.

Composting Bins in Dining Area: If your sustainable restaurant separates food waste in the dining area, provide clearly labelled composting bins for customers to dispose of their leftover food and biodegradable packaging.

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Educate Staff: Train kitchen staff about the importance of composting and how to correctly segregate food waste. Make composting part of your restaurant's sustainability culture.

Establish Composting Partnerships: Collaborate with local composting facilities or community composting programs to collect and process your restaurant's organic waste. Alternatively, consider having an on-site composting system if space allows.

Monitor and Manage Composting: Regularly monitor the composting process to ensure it remains efficient and does not produce foul odours. Turn the compost regularly and manage the carbon-to-nitrogen ratio for optimal decomposition.

Use Compost in the Garden: If your sustainable restaurant has a garden or plants on the premises, use the compost produced to enrich the soil and support sustainable agriculture.

Track and Share Results: Keep track of the amount of food waste diverted from landfills through composting. Share this information with staff and customers to demonstrate your restaurant's commitment to sustainability.

Engage Customers: Inform customers about your composting efforts and encourage them to participate by providing information on your menus, table tents, or signage.

Thanks to those composting practices, your sustainable restaurant can significantly reduce its environmental impact, close the food waste loop, and promote a more circular and eco-friendly food system.

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Exercise: Reduce and reuse food waste and leftovers	
Pre-requisites	Knowledge of the principal cooking processes and the way we handle the food wastes and leftovers.
Time	1 hour
Tools	PC or Smartphone, internet connection, optional kitchen tools
Objectives	1. Recognize, assess, and apply environmentally responsible methods for handling and disposing of waste materials. 2. Create strategies to reduce, reuse, recycle, and properly dispose of waste in ways that minimize negative impacts on the environment and human health.
Instructions	
Carefully read the module chapter and study the food offer of your school cafeteria. After analysing the situation, create a strategy to reduce food waste and to reuse leftovers, by implementing technical recipe sheet and analysing the results you get from them.	

Appendix

1. Glossary of Key Terms

This glossary provides definitions for key terms used throughout the learning material. It serves as a handy reference for students to better understand the terminology related to sustainable food practices, energy efficiency, local food systems, and more.

Sustainable Agriculture: A method of farming that focuses on environmental stewardship, economic profitability, and social responsibility. It aims to minimize the negative impact of agriculture on the environment while ensuring the long-term viability of farming.

Energy Efficiency: The practice of using less energy to perform a specific task or achieve a particular outcome, often by using energy-efficient appliances, techniques, or practices.

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Carbon Footprint: The total amount of greenhouse gases, primarily carbon dioxide (CO2), produced directly or indirectly by an individual, organization, event, or product throughout its lifecycle. It is often measured in units of carbon dioxide equivalent (CO2e).

Local Food: Food that is grown, produced, or sourced within a specific geographical region, typically with an emphasis on supporting local farmers and reducing food miles (the distance food travels from farm to plate).

Circular Economy: An economic system that aims to minimize waste and make the most of resources by designing products and materials for durability, reuse, remanufacturing, and recycling.

Food Waste: The edible food that is discarded at various stages of the food supply chain, from production and processing to distribution and consumption.

Composting: The natural process of breaking down organic matter, such as food scraps and yard waste, into nutrient-rich soil conditioner known as compost, which can be used to enrich soil for gardening and farming.

Sustainable Farming Practices: Methods of farming that prioritize environmental conservation and long-term ecological balance. Examples include crop rotation, cover cropping, and reduced pesticide use.

Renewable Energy: Energy derived from sources that are naturally replenished, such as sunlight, wind, and hydropower, and do not deplete finite resources like fossil fuels.

Food Security: The condition in which all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life.

Monoculture: The practice of cultivating a single crop species over a large area of land, often with the aim of maximizing production but at the risk of depleting soil and increasing vulnerability to pests and diseases.

Sustainable Kitchen Appliances: Energy-efficient and eco-friendly kitchen appliances designed to reduce energy consumption, water use, and environmental impact.

Regenerative Agriculture: A type of farming that aims to improve soil health, sequester carbon, and enhance biodiversity through practices like minimal soil disturbance, cover cropping, and rotational grazing.

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Food Miles: The distance food travels from the place of production to the consumer's plate. Reducing food miles is a key aspect of promoting local and sustainable food systems.

Circular Food System: An approach to food production, distribution, and consumption that minimizes waste, optimizes resource use, and emphasizes the importance of recycling and reusing food and food-related materials.

Food Resilience: The capacity of a food system to withstand and recover from shocks and stresses, such as climate change, economic fluctuations, and supply chain disruptions.

Sustainable Packaging: Packaging materials and designs that minimize environmental impact, reduce waste, and promote recyclability or compostability.

Fair Trade: A trading system that ensures fair wages and working conditions for producers in developing countries, often involving agricultural products like coffee and chocolate.

Biodiversity: The variety and variability of life on Earth, including the different species of plants, animals, and microorganisms, their genes, and the ecosystems they form.

Organic Farming: A farming method that avoids the use of synthetic pesticides, herbicides, and genetically modified organisms (GMOs) and emphasizes soil health, biodiversity, and sustainable practices.

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European Environment Agency (EEA): https://www.eea.europa.eu/en

Food and Agriculture Organization of the United Nations (FAO): https://www.fao.org/home/en

European Food Safety Authority (EFSA): https://www.efsa.europa.eu/en

European Environment Information and Observation Network (Eionet): https://www.eionet.europa.eu/

European Sustainable Development Network (ESDN): https://www.esdn.eu/

Sustainable Europe Research Institute (SERI): https://www.seri.at/

United States Environmental Protection Agency (EPA) - Energy Efficiency: https://www.epa.gov/energy/energy-efficiency

U.S. Department of Energy - Energy-Saving Tips for the Kitchen: https://www.energy.gov/energysaver/save-electricity-and-fuel/appliances-and-electronics/energy-saving-tips-kitchen

Local Harvest**:** https://www.localharvest.org/newsletter/

LCA Learning: https://www.lifecycleinitiative.org/

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3. Further readings

- ***Pollan, M. (2011). The omnivore's dilemma. Bloomsbury Publishing PLC.***- Explores the modern food industry and the impact of our food choices.
- ***Participant Media & River Road Entertainment present; a film by Robert Kenner; producers, Robert Kenner, Elise Pearlstein; writers, Robert Kenner, Elise Pearlstein, Kim Roberts; directed by Robert Kenner. (2009). Food, Inc. [Los Angeles, CA]: Magnolia Home Entertainment.*** - A visual exploration of the food production industry and its environmental and social consequences.
- ***Pollan, M. (2009). In defence of food. Penguin.*** - Offers practical advice on making healthier and more sustainable food choices.
- ***Dan Barber (2016). The Third Plate: Field Notes on the Future of Food. Paperback. Penguin Press.*** Chef Dan Barber explores the evolution of American food from the 'first plate,' or industrially produced, meat-heavy dishes, to the 'second plate' of grass-fed meat and organic greens and says that both of these approaches are ultimately neither sustainable nor healthy.

Websites:

- The Sustainable Food Trust: Offers articles, reports, and resources on sustainable food systems.
- Energy Star: Provides information on energy-efficient appliances and practices.
- Local Harvest: Connects consumers with local farmers and food producers.

Organizations:

- Slow Food: Advocates for sustainable and local food traditions.
- The Ellen MacArthur Foundation: Promotes the circular economy and its applications in various industries, including food.
- Food Tank: A think tank focused on sustainable agriculture and food systems.

Videos:

- TED Talks on Food: Features a collection of TED Talks on various food-related topics, including sustainability.
- Food, Inc. (Documentary): A powerful documentary that explores the modern food industry and its impact.
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Sincerely,

Rodolfo Meléndrez Rodriguez

Chef / Cooking Techniques Course Coordinator

EPATV

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