GUIDE TO SUSTAINABLE MENUS

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A guide to sustainable menus

A step by step approach to sustainablility

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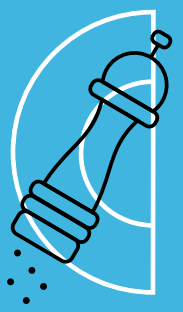

Chapter 9

Choosing your sustainable condiments, seasonings, sweeteners, and fats

1 Sustainable condiments, seasonings, sweeteners, and fats

Why consume condiments, seasonings, sweeteners, and fats?

Condiments, seasonings, sweeteners, and fats are ways to add flavour to your prepared meals! In addition, small amounts can enhance synergistic nutrient properties[192] that may not be found in prepared meals. For example, consuming tomatoes with olive oil has been found to enhance the function of nutritional compounds in tomatoes.[193]

Why are sustainable condiments, seasonings, sweeteners, and fats important?

Sustainable condiments, seasonings, sweeteners, and fats are local products which support local economies, are created with whole ingredients and minimize waste. Using a variety of these products also moves away from reliance on the production of staple products such as salt and pepper, thereby encouraging a diversity of crops grown sustainably, globally. It also widens the taste palate of your clientele.

How do sustainable condiments, seasonings, sweeteners, and fats impact health?

Condiments, seasonings, sweeteners, and fats can be a source of hidden calories. However, they are good for your health when consumed responsibly. Consumption in small amounts is harmless; however, large amounts of any product can result in an excess of sodium or sugar, for example, and have detrimental effects on health and the environment.

192 Arnarson, 2017.
193 Ahuja et al., 2006.

2 Making sustainable condiment, seasoning, sweetener, and fat choices

LEGEND

Choice of condiment and seasoning	Tips for using
• **Ranking/Order (when indicated)** · A ranking of food items per category, in general order of decreasing sustainability. See the appendix for methodology used.	· With reference to environmental, social, and economic sustainability, these are tips for choosing your ingredients. If a choice meets one criterion, you have taken a small step towards sustainability. The more criteria met, the more sustainable the choice. · External links are embedded: explore these websites for more information. · The labels below are good indicators of sustainable practice. In some provinces, other logos are used to identify organic or local food. Look for your province's logo! However, be mindful that there exist producers who have sustainable practices but do not have certification—perhaps due to cost or other limitations.

HOW CAN I CHANGE?

Use this chart to choose a variety of condiments, seasonings, sweeteners, and fats, and increase sustainable choices.

CHOICE OF CONDIMENT, SEASONING, SWEETENER, AND FAT

1. Herbs and spices

INDIGENOUS[194] **: MINT - NETTLES - POPLAR - ROSEHIP - SORREL - WILLOW - YARROW**

CANADIAN[195] **: CARAWAY - CORIANDER - DILL SEED - FENUGREEK - MUSTARD**

IMPORTED (DRIED)*: **ALLSPICE - BASIL - BAY LEAF - CARDAMOM - CILANTRO - CINNAMON - CHIVES - CLOVES - CUMIN - FENNEL - GARLIC POWDER - GINGER - LEMONGRASS - MARJORAM - NUTMEG - OREGANO - ONION POWDER - PAPRIKA - PARSLEY - PEPPERMINT - ROSEMARY - SAFFRON - SAGE - SUMMER SAVORY - TARRAGON - THYME - TURMERIC - VANILLA**

See the appendix for potential antimicrobial health properties.

TIPS FOR CHOOSING

See Gourmet Garden's herb pairing guide for more information on how to integrate herbs into your recipes.

- **Grow fresh herbs.**
  - Herbs grown from root have the same health benefits as dried herbs, and will last longer than cut herbs, which are highly perishable. Consult this Arctic Gardens webpage on fresh herbs.
- **Grind fresh spices.**
  - This can give you a stronger, fresher flavour. It can be easier to find fresh local herbs.
- **Choose local herbs.**
  - A small variety of herbs are grown in Canada, some of which have been used by Indigenous peoples for thousands of years; source regionally if possible. *While dry basil, oregano or garlic powder can be available in Canada it is not produce at large enough scale to provide all buyers with regional dried herbs. Most foodservice format of dried herbs are imported (ex: basil from Egypt, garlic from China, oregano from Turkey)
- **Choose fair-trade herbs.**
  - Many diverse herbs are imported from all over the world; seek fair-trade sources if possible.
- **Buy dried herbs and spices in bulk.**
  - Dried herbs and spices are high sources of polyphenols, which have antioxidant and anti-inflammatory properties.[196] Instead of purchasing packets of herbs and spices, invest in large containers. This reduces the waste that you produce.

2. Salt and alternatives

ITEMS LISTED IN ORDER OF SUSTAINABILITY

NUTRITIONAL YEAST - TABLE SALT (IODIZED) **- SEA SALT - KOSHER SALT - ROCK SALT** (EX: HIMALAYAN PINK SALT) **- BLACK SALT** (INDIAN BLACK SALT, KALA NAMAK)

See the appendix for sustainability of salt extraction.

- **Choose regional suppliers from nearby provinces and states.**
  - Goderich, Ontario is home to the world's largest salt mine[197].
- **Consider alternatives to salt.**
  - Nutritional yeast is a species of yeast grown for its nutty, cheesy taste. When fortified, it is a great source of protein, B vitamins, and trace minerals.[198] It is often found in vegan recipes as a healthy, sustainable substitute for cheese and salt.
- **Be conscious of salt extraction processes.**
  - See the appendix for more information on the extraction of salt.
- **Moderate salt intake.**
  - Salt is essential to the diet as an electrolyte in the body. However, overconsumption of salt can lead to increased incidence of cardiovascular problems; underconsumption can lead to the same effects[199].

194 Ford, 2015.
195 Small, 2015.
196 Opara & Chohan, 2014.
197 Compass Minerals, n.d.
198 Julson, 2017.
199 O'Donnell et al., 2011.

CHOICE OF CONDIMENT, SEASONING, SWEETENER, AND FAT

3. Sugar syrups

ITEMS LISTED IN ORDER OF SUSTAINABILITY

MAPLE SYRUP - HONEY - AGAVE - CORN SYRUP

See the appendix for potential antimicrobial health properties.

TIPS FOR CHOOSING

- **Avoid corn syrup.**
  - Excessive use of nitrogen fertilizers for corn crops can pollute the air, soil, and water[200] and intensive corn production reduces soil fertility.
  - Production of corn syrup is also an energy-intensive process from field to bottling. Starch is liquefied and treated with enzymes to produce syrup—the duration of this treatment determines the level of sweetness.[201] Global warming impact primarily comes from growing raw materials (511 kg CO2 equivalents) with processing as a secondary impact (332 kg CO2 equivalents).[202] There is little to no nutritional benefit because corn syrup is pure sugar.
- **Moderate sugar syrup intake.**
  - See the appendix for good resources on sugar.
  - Sugar syrups such as maple syrup and honey have exhibited promising health effects in studies, but only if consumed in relatively large quantities. It is important to be cautious of sugar intake: although maple syrup and honey are alternatives to raw sugar, they are still high sources of sugar. The EAT-Lancet commission proposes that for a planetary healthy diet, sugar intake should be around 31g per day.
- **Purchase locally produced sugar syrups.**
  - Canada is the world's largest producer of maple sap, supplying about 80% of the world's output![203] Purchasing local honey also supports local crops: some colonies of honeybees are also used for pollination to ensure crop health.[204]
- **Buy in bulk and refill rather than purchasing individual plastic packets.**
  - Instead of purchasing packets of syrup, invest in large containers and refill containers placed for serving. This reduces the waste that you produce.

4. Sugar and alternatives

WHITE SUGAR - BROWN SUGAR - STEVIA - COCONUT SUGAR PALM - SUGAR PALM - SUCRALOSE - ASPARTAME

There are many types of sugars: see this website for information on all of the types!

Globally, sugar production has a range of environmental impacts. A number of factors including soil erosion, intensive irrigation and chemical use, and discharge of pollutants all contribute to the unsustainable nature of sugar production. See WWF's Sugar and the Environment report for more detailed information regarding its impacts.

Sugar comes from two sources: sugarcane, produced in tropical environments, and sugar beet, produced in more temperate environments: for example, Southern Alberta maintains the last remaining sugar beet processing plant in Canada.[205]

Alternative sources of sugar, such as coconut palm sugar, are emerging. In Southeast Asia, coconut palm sugar is known as an indigenous sweetener because of its simple processing procedure: collect the liquid sap of coconut palm sugar trees and place under heat until evaporation.[206] Coconut palm sugar trees are multi-functional with other industry uses such as fibre: in addition, when planted as part of an agroforestry strategy, they can reduce erosion and contribute to the health of the environment.[207] However, consider the great distances required for transportation to Canada!

- **Avoid artificial sweeteners.**
  - Artificial sweeteners are not optimal for human health: they are not fully metabolized by the human body and can leach into our environment through wastewater.[208] These compounds accumulate and can degrade into other active compounds in the environment. There is little research on the long-term impact of these compounds but aquatic organisms have been found to be damaged by these residues.[209]
- **Reduce added sugar intake.**
  - Added sugar can disguise itself under many names. See the appendix for good resources on sugar. Sugar in excessive quantities can cause many of the same problems as alcohol in excessive quantities.[210] The EAT-Lancet commission proposes that for a planetary healthy diet, sugar intake should be around 31g per day.
- **Buy in bulk and refill rather than purchasing individual plastic packets.**
  - Instead of purchasing packets of sugar, invest in large containers and refill containers placed for serving. This reduces the waste that you produce.

200 Government of Saskatchewan, n.d.
201 Corn Refiners Association, 2009.
202 An & Katrien, 2015.
203 Peritz, 2017.
204 Statistics Canada, 2018.
205 Alberta Sugar Beet Growers, 2017.
206 Mogea et al., 1991.
207 Ibid.
208 Subedi & Kannan, 2014.
209 Kattel et al., 2017.
210 Lustig et al., 2012.

CHOICE OF CONDIMENT, SEASONING, SWEETENER, AND FAT

5. Flavoured spreads

FRUIT JAMS AND JELLIES - NUT BUTTERS

See Chapter 4 for sustainable nut butter choices.

TIPS FOR CHOOSING

- **Avoid long ingredient lists with additives and preservatives.**
  - Additives and preservatives prolong ingredient lists to maintain shelf life. Look for healthier alternatives, such as condiments made out of whole foods.
- **Avoid spreads which have high amounts of added sugar.**
  - Added sugar can disguise itself under many names. See the appendix for good resources on sugar.
  - Sugar in excess quantities can cause many of the same problems as alcohol in excess quantities.[211]
- **Make your own or purchase local.**
  - This allows you to control the sugar content and retain fresh nutritional benefits, such as the fibres in pectin.
- **Buy in bulk and refill rather than purchasing individual plastic packets.**
  - Instead of purchasing packets of spreads, invest in large containers and refill containers placed for serving. This reduces the waste that you produce.

6. Oils, butters, margarines

WHITE SUGAR - BROWN SUGAR - STEVIA - COCONUT SUGAR PALM - SUGAR PALM - SUCRALOSE - ASPARTAME

Globally, vegetable oil production has a range of environmental impacts. A study on five different vegetable oils found that canola and soybeans are often grown as monocultures with high agrochemical inputs; palm oil produces methane, a greenhouse gas, during processing; peanut oil uses large amounts of energy for cultivation; while sunflower oil uses large amounts of land for cultivation.[212]
See the appendix for diagram of vegetable oil production.

- **Choose regional suppliers from nearby provinces and states for local oils.**
  - Genetically modified canola and soybean are among Canada's principal field crops[213] and drive the Canadian oilseed industry, much of which is processed domestically.[214]
    See the appendix for information on genetically modified organisms.
- **Look for certifications and labelling on imported oils.**
  - Labels such as USDA/Canada Organic and Fairtrade ensure the product is sustainably produced. Be cautious of palm oil—see Chapter 8 for more information.
- **Butter has a much greater environmental impact than margarine.**
  - This is largely because cows produce large amounts of methane, a greenhouse gas. Dairy farming also contributes disproportionately to large land use, and to water and air pollution.[215]
- **Choose expeller or cold-pressed oils.**
  - Common oils are extracted from seed using solvent, notably n-hexane. Although this compound degrades rapidly and has low bioaccumulation potential, it can still pose a risk to the aquatic environment.[216]
- **Buy in bulk and refill rather than purchasing individual plastic packets.**
  - Instead of purchasing packets of oil and butter, invest in large containers and refill containers placed for serving. This reduces the waste that you produce.
- **Prefer oil with unsaturated and monounsaturated fat content.**
  - Butter, coconut oil and palm oil contains high level of saturated fat. The EAT-Lancet commission suggests that, for a planetary healthy diet, each person's intake of unsaturated oils should be around 40 g per day and saturated oils around 12 g per day.

211 Ibid.
212 Schmidt, 2015.
213 Statistics Canada, 2017.
214 Canadian Oilseed Processors Association, n.d.
215 Nilsson et al., 2010.
216 Environment Canada & Health Canada, 2009.

CHOICE OF CONDIMENT, SEASONING, SWEETENER, AND FAT

5. Sauces

KETCHUP - MUSTARD - SOY - LIQUID AMINOS - TAMARI - TERIYAKI BARBECUE - HOT/SPICY - FISH

TIPS FOR CHOOSING

- **Avoid long ingredient lists with additives and preservatives.**
  - Additives and preservatives prolong ingredient lists to maintain shelf life. Look for healthier alternatives, such as condiments made out of whole foods.
- **Moderate salt and sugar intake.**
  - Salt is essential to the diet as an electrolyte in the body. However, overconsumption of salt can lead to increased incidence of cardiovascular problems; underconsumption can lead to the same effects.[217] Many sauces may also have high "hidden" sugar content to be considered when assessing their nutritional value.
- **Make your own or purchase local varieties.**
  - This allows you to control the sugar and salt content and retain fresh nutritional benefits not found in processed sauces.
  - Certain sauces can be made using ingredients you already have. For example, a BBQ sauce can be made using ketchup, brown sugar, and spices.
- **Buy in bulk and refill rather than purchasing individual plastic packets.**
  - Instead of purchasing packets of ketchup or mustard, invest in a large bottle and refill regularly. This reduces the waste that you produce.

6. Pickled and fermented condiments

MISO - RELISH - KIMCHI - SAUERKRAUT - PICKLES - PICKLED - OLIVES - PICKLED ONIONS - PICKLED CABBAGE - PICKLED PEPPERS - PICKLED BEANS - PICKLED EGGPLANT - PICKLED BRUSSELS SPROUTS - PICKLED BEETS - PICKLED GINGER

See the appendix for fermented food benefits.

Pickled condiments are soaked in brine.

Fermented condiments are also soaked in brine but have the addition of probiotics which nourish your digestive system.

Miso, for example, is a fermented Japanese paste that can add lots of flavour to marinades, broths, and salad dressings—although it is recommended for use in cold rather than hot dishes to preserve the probiotic benefits.[218]

- **Avoid long ingredient lists with additives and preservatives.**
  - Additives and preservatives prolong ingredient lists to maintain shelf life. Look for healthier alternatives, such as condiments made out of whole foods. In addition, fermented products should be refrigerated to maintain the health of probiotics.
- **Make your own or purchase local varieties.**
  - This allows you to control the salt content. In addition, making your own significantly reduces the energy use for manufacturing and storage compared to mass-produced quantities.[219]
- **Buy in bulk and refill rather than purchasing individual plastic packets.**
  - Instead of purchasing jars or packets of condiments, invest in large containers and refill containers placed for serving. This reduces the waste that you produce.

217 O'Donnell et al., 2011.
218 Petre, 2017.
219 Rivera, 2014.

3

Learning about traditional Indigenous condiments, seasonings, sweeteners, and fats

The examples that follow may represent foods of a specific geographical location or Indigenous territory. Please be mindful of the Indigenous territory you are on: make connections, build relationships and learn what foods are original to this territory.

Indigenous people made wide use of natural plants, flowers, roots, and trees to enhance their meals. Tree sap was widely use as sweetener. For example, maple syrup was first discovered by the First Nations peoples, who passed this knowledge to European settlers.[220]

The following information is from *Traditional Plant Foods of Canadian Indigenous Peoples*:[221]

"Indigenous People took advantage of such delicacies as rose petals, fireweed flowers, and mariposa lily buds. Flowers are high moisture-containing foods, usually low in protein and fat, but some can be surprisingly rich in vitamin A as carotene or vitamin C. Licorice fern rhizomes, which grow on the bark of trees, were sometimes used by coastal peoples of British Columbia to give a sweet licorice taste. Some 'root' foods including camas, nodding onion, and balsamroot became very sweet when their inulin content was converted to fructose through storage and cooking processes."

A number of aromatic and otherwise strongly flavoured plants were used as condiments in cooking. Several species of the mint family were used as culinary herbs in soups and stews, as were some species of the celery family such as Indian celery greens and seeds. Some of these plants, as well as some aromatic plants in the aster family, also functioned as preservatives for meat and fish."

220 Peritz, 2017.
221 Kuhnlein & Turner, 1991.

Controlling condiment, seasoning, sweetener, and fat waste

Serve in bulk.

- Rather than putting out small plastic packages of salt, pepper, ketchup, etc., place large bottles or containers and refill often.
- The same can apply for packages of butter, margarine, or bottles of oil.

Serve with reusable tools.

- Avoid plastic straws; instead of plastic coffee stirrers, offer lengths of uncooked flat pasta such as fettucine to mix coffee.

Appendix

Fermented foods

Fermented foods are typically cultured using lactic acid bacteria. This has a number of potential benefits including digestive system health, enhancing the immune system, increasing the bioavailability of nutrients, and reducing the risk of certain cancers. Probiotics can play a key role in maintaining a healthy diet[222].

Genetically modified organisms (GMOs), genetic engineering (GE), genetically modified (GM)

Crops have been genetically modified for thousands of years. Through plant breeding and artificial selection, we have been able to domesticate plants into the fruits and vegetables we consume today.[223] Genetic engineering is a new technology for genetically modifying crops. Before a genetically engineered crop is approved for growth and sale in Canada it must undergo a rigorous assess-

222 Parvez et al., 2006.
223 Gepts, 2001.

ment by Health Canada to ensure it is safe for human consumption.[224] Genetic engineering is used in several different forms of pesticides (a term that includes herbicides, insecticides and fungicides).[225] GM crops are commonly genetically engineered to resist herbicides that may be used to control weeds. However, the use of these crops prompts the proliferation of herbicide-resistant weeds, increasing farmers' reliance on chemical herbicides and allowing herbicide-resistant weeds to proliferate.[226] The chief concerns with GM crops arise from the uncertainty related to the long-term health effects of both consumption and the associated increased use of herbicides and pesticides. Dietitians of Canada and Health Canada state that there are no such effects[227] [228]. However, Health Care Without Harm encourages healthcare facilities to refrain from purchasing genetically engineered foods due to evidence of risks worldwide.[229] In Canada, four GM crops are currently grown: corn, soybean, canola, and sugar beet.[230]

Micronutrient fortified condiments

Condiments fortified with micronutrients are an emerging technology, particularly in countries which suffer from micronutrient deficiencies. While iodized salt has been in use for many decades, other micronutrients such as iron have been successfully added to fish sauces particularly for iron-deficient populations in Asia.[231]

Sugar

Added sugar comes in many forms under a multitude of names: see the SugarScience resource from scientists at the University of California, San Francisco.

Salt extraction

It is difficult to determine the sustainability of salt extraction processes. All publicly accessible information is published by salt production companies and the life cycle analysis of salt is not well-documented. Solution mining is quite fossil-fuel intensive; solar processing can pose issues for wildlife; rock salt extraction is quite an intrusive process.

224 Health Canada, 2012.
225 Canadian Biotechnology Action Network (cban.ca)
226 Gilbert, 2013.
227 Dietitians of Canada, n.d.
228 Health Canada, 2018.
229 Healthcare Without Harm, n.d.
230 Dietitians of Canada, n.d.
231 Mejia et al., 2015.

Solution mining (table salt, kosher salt)

A well is dug into an underground salt deposit. Water is pumped in to create brine, which is then processed through evaporation to obtain salt. The process is quite fossil-fuel intensive, but there is no waste pile produced above ground. If managed incorrectly, there is a potential for ground collapse.[232]

Solar evaporation (table salt, sea salt, kosher salt)

Ponds of saltwater are left to evaporate naturally. The process is not fossil-fuel intensive but concerns for wildlife have been raised, particularly because waterfowl and shorebirds may use salt ponds for resting, foraging, and nesting.[233]

Shaft mining (rock salt, Himalayan pink salt, black salt)

Shaft mining takes place through vertical excavation, deep into the rock face. There are two main methods for extraction of rock salt: "cut and blast" mining, which uses explosives to crush rock salt in pieces, and "continuous mining" which bores into the salt and extracts lumps for further crushing.[234]

Sustainability methodology

- Salt and alternatives
  Ranking was primarily determined through energy input required to produce the food item.
- Sugar syrups
  Ranking was determined through an assessment of ingredient origin (regionality) and energy input required to produce the sugar syrup.
- Oils, butters, margarines
  Ranking was determined through a life cycle assessment of five vegetable oils: palm, soybean, canola, sunflower, and peanut.[235] Regionality was also taken into consideration; canola, sunflower, and soybean oils are commonly produced in

232 Warren, 2016.
233 San Joaquin Valley Drainage Implementation Program, 1999.
234 European Salt Producers' Association, n.d.
235 Schmidt, 2015.

Canada while olive, coconut, and palm oils are often imported.

Vegetable oil production

The main steps in vegetable oil processing are extraction, refinement, other modification, and deodorization. Consult the Environmental, health, and safety guidelines for Vegetable oil production and processing to learn more.

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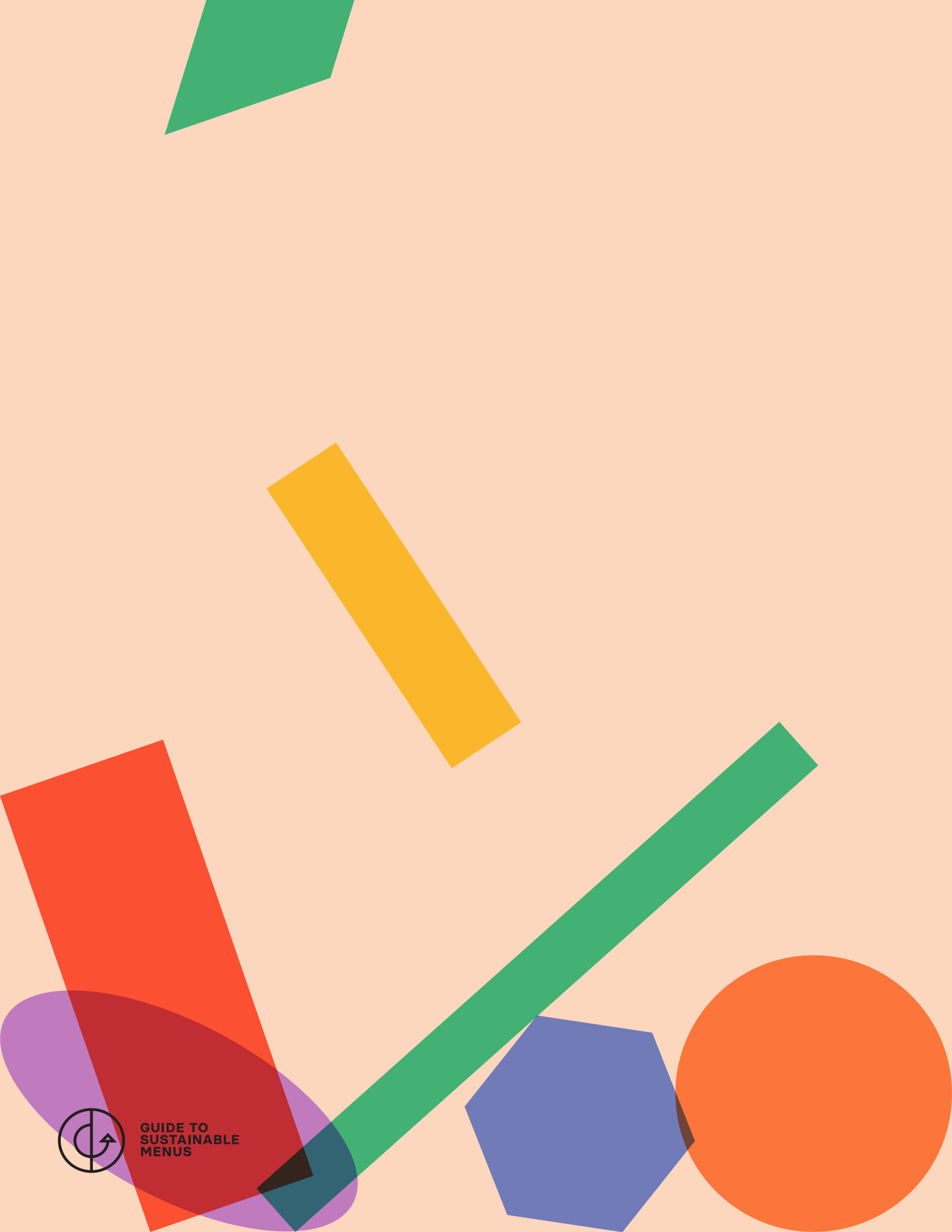
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