



GUIDE TO
SUSTAINABLE
MENUS



A guide to sustainable menus

A step by step approach
to sustainability



NOURISH
The future of food
in health care.

November 2019



Chapter 8

Choosing your sustainable dessert



Sustainable desserts

Why serve dessert?

Desserts give users an opportunity to satisfy their sweet tooth while providing nutritional value and a sense of satiety. Sometimes, they are also an opportunity to complete the meal.

Why are sustainable desserts important?

Sustainable desserts are made from sustainable ingredients (for sources, see other chapters such as Proteins and Starches). In addition, they prevent food waste. For example, using leftover bread for bread pudding or overripe bananas for muffins is a great way to prevent food waste and serve delicious dessert. Sustainable desserts also have minimal packaging.

What impact do sustainable desserts have on health?

Sustainable desserts typically have good nutritional value. They are made from whole ingredients, have limited amounts of added sugar, and are a good source of nutrients.



What are my dessert standards?

Before choosing the type of dessert for a menu, dessert standards must be written. Dessert standards are guidelines that you must work with such as dietary restrictions, allergies, and patient preferences. Below is an example of meal standards written by a food service manager for an institution. The last two columns indicate a clientele to which they may apply (examples might be the elderly, youth, acute care, etc.).

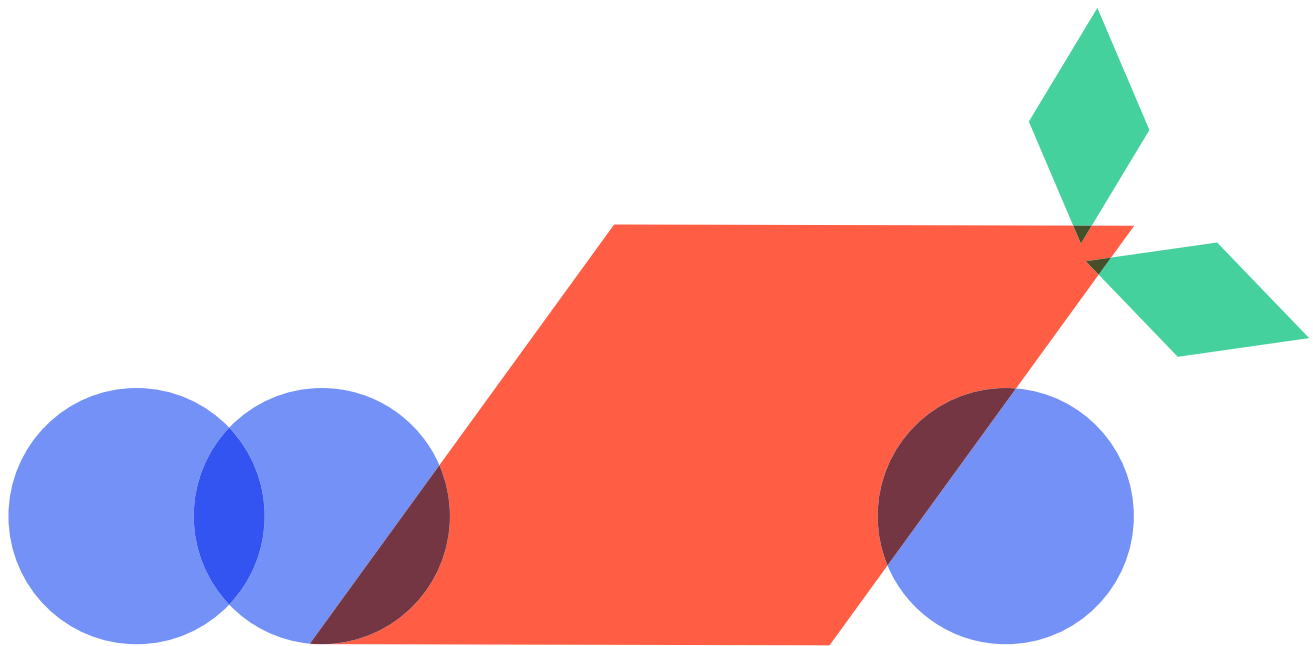
Standards	Clientele a	Clientele b
2 choices of fruit per day on the menu	X	X
2 choices of fresh fruit per week on the menu	X	X
1 choice of dairy (or vegetarian milk) dessert per day	X	X
À la carte each day: fresh fruit, pureed fruit	X	X
Frozen dessert available at each meal	Upon request	Upon request
Fruit yogurt with or without fruit pieces available each meal (lactose-free upon request)	X	X
Cake and pastries are homemade twice a week	X	X
Repetition of fruit and yogurt: maximum twice a week	X	X
Prefer dessert with maximum of 30g of carbohydrates per portion	X	X
Enriched desserts are at available each meal		X

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Making sustainable dessert choices

HOW CAN I CHANGE?

The EAT-Lancet commission recommends that North Americans should increase their consumption of fruit to 200 g per day. Dessert should be made with simple ingredients: whole grains, fruits, whole milk products, oils (40g of unsaturated fat and 11.8 g of saturated fat per day), sugar (31 g per day).



CHOICE OF DESSERT
(listed from most to least
sustainable)

1. Regional fruit in season

See calendar in appendix

SUMMER FRUITS. BERRIES: **STRAWBERRIES - BLUEBERRIES
BLACKBERRIES - GOOSEBERRIES - SASKATOON BERRIES
MULBERRIES** - STONE FRUITS: **PEACHES - PLUMS - APRICOTS -
CHERRIES** - MELONS: **WATERMELON - CANTALOUPE - HONEYDEW**
FALL FRUITS: **CRANBERRIES - APPLES - PEARS**

TIPS FOR CHOOSING

- **Choose organic.**
 - Organic farming keeps soil healthy by not using synthetic fertilizers, preventing erosion, and enhancing nutrient and water absorption capabilities.¹⁴⁷
- **Choose fresh fruits in season.**
 - If unavailable or out of season, consider frozen alternatives from regional suppliers when possible.
 - If canned: be wary of added sugars and syrups.
- **Choose regional.**
 - If you are based in Quebec, for example, it is better to source from Vermont or Maine than BC.
 - Choose minimal packaging or recyclable packaging.
 - Prefer bulk fruit if possible.
- **Be conscious of sulphites in dried fruits.**
 - Sulphites occur naturally in food but are often added to preserve dried fruits. Be conscious of clientele who may be sulphite-sensitive (often seen in children who have asthma¹⁴⁸); they may develop allergy-like symptoms.¹⁴⁹ Prefer organic dried fruit without added sulphites.
- **Be conscious of sugar and portion size for dried fruits.**
 - People usually eat more dried fruit than the equivalent quantity of fresh fruit, which contributes to a higher sugar intake. Dried fruits may also have high amounts of added sugar.
 - The fruit-drying process is currently lengthy and energy-intensive, but advances in technology will make it more sustainable and cost effective.¹⁵⁰

TIPS FOR INTEGRATING INTO YOUR RECIPES

- Highlight the seasonality of local fruits! Serve fruits during the peak season: this is when they are most visually appealing and taste the best.
- **Pair**
 - Slice a variety of fruits to create fruit cups, or serve at a fruit salad bar with yogurt and granola options to make parfaits.
 - Granola should not be added to yogurt prior to selling.
- **Grill**
 - [Grilling fruits](#) is a great way to bring out caramelized flavour from natural sugars.
- **Preserve**
 - Before fruit rots, freeze it in a container for future use.
- **Replace**
 - Rather than using refined sugar, try baking with dried fruits.

147 FAO, 2018.

148 Vally et al., 2009.

149 Health Canada, 2017.

150 Sagar & Kumar, 2010.

151 FAO, 2018.

152 Fairtrade Canada, n.d.

153 Plecyk & McKinnon, 2010.

154 Vally et al., 2009.

155 Health Canada, 2017.

156 Sagar & Kumar, 2010.

2. Imported fruit

*ALL LOCAL FRUITS, WHEN OUT OF SEASON

**BANANAS - ORANGES - MANDARINS - CLEMENTINES -
PINEAPPLES GRAPES**

- **Choose organic.**
 - Organic farming keeps soil healthy by not using synthetic fertilizers, preventing erosion, and enhancing nutrient and water absorption capabilities.¹⁵¹
- **Choose fair trade.**
 - Fair trade certification guarantees that producers receive equitable pay and working conditions and encourages responsible environmental practices.¹⁵²
- **Prioritize fresh or frozen regional, seasonal fruits.**
 - This is the best way to provide fruits with excellent taste and nutritional quality, while also supporting local economies.
- **When choosing canned exotic and out-of-season fruits, prioritize those with no added sugar.**
 - Canned fruits have a stable shelf life and are typically transported by ship or rail. Fresh exotic and out-of-season fruits may require air transportation to minimize travel time, which is incredibly energy-intensive.¹⁵³
- **Be conscious of sulphites in dried fruits.**
 - Sulphites occur naturally in food but are often added to preserve dried fruits. Be conscious of clientele who may be sulphite-sensitive (often seen in children who have asthma¹⁵⁴)—they may develop allergy-like symptoms.¹⁵⁵ Prefer organic dried fruit without added sulphites.
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CHOICE OF DESSERT
(listed from most to least sustainable)

3. Homemade mousse/ pudding desserts

See Chapter 4 for sustainable dairy choices. See Chapter 5 for sustainable flour choices. See Chapter 9 and appendix for sustainable sugar choices.

BREAD PUDDING - TOFU PUDDING, MOUSSE - ALMOND, COCONUT, SOY, CASHEW PUDDING, MOUSSE - DAIRY PUDDING, MOUSSE

TIPS FOR CHOOSING

- Homemade desserts are a sustainable approach to serving desserts. When whole ingredients are used, they are less energy-intensive and produce less waste than processed desserts.¹⁵⁷ In addition, they allow more control over nutritional value and often taste better.
- **Avoid using too much refined sugar.**
 - Instead of sugar, try using fresh, frozen, or dried fruit.
 - Dates are also a good sweetener and provide plenty of fibre.
- **Choose plant-based ingredients.**
 - Plant-based ingredients have a lesser environmental impact than dairy products. In addition, they can also increase fibre and unsaturated fat content (soy milk, coconut milk: see Chapter 4 for more information).

TIPS FOR INTEGRATING INTO YOUR RECIPES

- **Replace**
 - Try a 50/50 combination of dairy and plant-based milk to make steps towards sustainable choices.
 - Use date puree to replace refined sugar.

4. Homemade baked goods

See Chapter 5 for sustainable flour choices. See Chapter 9 and appendix for sustainable sugar choices.

BREADS - COOKIES - CAKES - PASTRIES

- Homemade baked goods are an opportunity to provide good nutritional value, particularly when preserved fruits are used, and to prevent food waste.
- **Avoid refined wheat flours.**
 - Desserts often call for refined white flour: consider using a 50/50 combination of whole wheat and white flours to provide the nutritional benefits of fibre and micronutrients.
- **Consider using alternative flours for added nutritional benefits and to encourage biodiversity.**
 - Although wheat is a popular flour, choosing alternative flours encourages greater genetic diversity of grain crops.¹⁵⁸
- **Prefer recipes with fibre and protein and less sugar.**
 - Pastries often contain high levels of fat and sugar and are low in fibre.

- **Replace**
 - Vary the classic oatmeal with different grains (buckwheat, spelt, quinoa, etc.).
 - Instead of using refined sugar, try using local maple syrup or honey (replace 1:1): this also reduces the amount of liquid needed in your recipe: reduce 105ml of liquid for each cup of syrup or honey added.
 - Use silken tofu, ground flaxseed, or chia instead of eggs.
 - Replace wheat flour with oat, bulgur, chickpea, or legume flours that can be sources of protein in your desserts.
- **Preserve**
 - Consider making a larger batch of batter than needed and freezing the remainder for future use.

CHOICE OF DESSERT
(listed from most to least
sustainable)

5. Ready-made processed desserts



See Chapter 9 for more information. See the appendix for information on artificial colourants and flavourings.

POWDERED PUDDINGS - CAKE MIXES - FROZEN DESSERTS

TIPS FOR CHOOSING

- Ready-made processed desserts may be unsustainable due to the energy expended in processing and packaging and to the lengthy list of ingredients.
- **Be cautious of palm oil.**
 - Palm oil production is extremely damaging to the environment, wildlife, and human health. Seek out oil from sustainable production practices or limit consumption. See the appendix.
- **Avoid desserts which have high amounts of added sugar.**
 - Added sugar can disguise itself under many names. See the appendix for good resources on sugar. If you must choose desserts that are high in sugar, those containing fibre are to be preferred.
- **Choose desserts with good overall nutritional value.**
 - When possible, choose desserts which contain protein.
 - If a dessert has no or low fibre content, choose a dessert with low saturated-fat content.
- **Choose a regional company that can personalise ingredients to match your needs.**
 - Small regional companies can often supply good homemade desserts at a reasonable price when bought in large quantities.
- **Choose whole ingredients with minimal preservatives and additives.**
 - Store-baked goods often have long ingredient lists to maintain shelf life; for example, instead of using whole eggs, dried egg white powder is used.

TIPS FOR INTEGRATING INTO YOUR RECIPES

- **Optimize**
 - To improve the nutritional value of powdered, processed desserts, consider adding fruits, nuts or seeds.
- **Portion**
 - Serve smaller portions of desserts and enhance by adding fresh or frozen fruits.

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Learning about traditional Indigenous desserts

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.

Traditional Indigenous desserts often make use of sweet berries found in nature, depending on the region: wild saskatoon berries, redberries, and buffalo berries, to name a few. In the far North, whipping berries and greens together with fat and snow made a type of ice cream.¹⁵⁹ In the West, buffalo berries were also whipped to create jams and jellies.¹⁶⁰ These were the primary sources of sweetness in Indigenous diets before refined sugars were introduced. These fruits also gave rise to variations of traditional recipes, such as sweet bannock.

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Appendix

Additives

[See Health Canada's complete list of approved additives.](#)

ARTIFICIAL FLAVOURINGS

The chemical composition of artificial flavours and natural flavours are the same. The only difference is the source of the chemicals: synthesized from numerous chemicals in the former or derived from

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Kuhnlein & Turner, 1991.
BC Food History Network, 2016.

numerous chemicals found in plants and/or foods in the latter.¹⁶¹ Natural does not necessarily mean “good” or “safe” and neither does artificial. Ultimately, dosage dictates toxicity: flavourings are safe for consumption in appropriate amounts.

ARTIFICIAL COLOURING, ARTIFICIAL FOOD COLOURANTS (AFCS)

Most of the controversy surrounding artificial food colourants (AFCs) involve links between its consumption and children’s behaviour, and attention deficit disorder in particular. It is statistically challenging to come to a hard conclusion of the effect of one variable on the other because of the variance in data collection and methodologies over the past 35 years.¹⁶² Ultimately, the United States Food and Drug Administration along with the European Food Safety Authority have concluded that there is no substantial link between the tested colourants and behavioural effects.¹⁶³ Again, dosage dictates toxicity: artificial colourants are safe for consumption in appropriate amounts.

ARTIFICIAL SWEETENERS

Artificial sweeteners are a sugar substitute which can either come in low-calorie or zero-calorie forms. They are commonly used by diabetic patients and those looking to lose weight.¹⁶⁴ However, few studies support their efficacy: most provide evidence of their contribution to high blood sugar and obesity as a result of altering the gut microbiota.^{165 166}

Palm oil

Palm oil is a common ingredient found in processed foods. It’s the world’s most versatile vegetable oil it is also a very productive crop. It offers a far greater yield at a lower cost of production than other vegetable oils. Its high melting point (solid at room temperature) makes it a cheap alternative to animal fats and a healthier alternative to hydrogenated oils that contains trans fat for processes such as baking and frying, or for use in spreads.¹⁶⁷ Items such as bread, margarine, ice cream, and chocolate are likely to contain substantial amounts of palm oil. The high demand for palm oil has caused massive deforestation in concentrated areas, particularly in forests which are key to storing CO₂, a greenhouse

161 Bloom, 2017.

162 Nigg et al., 2012.

163 International Food Information Council (IFIC) & U.S. Food and Drug Administration (FDA), 2010.

164 Dietitians of Canada, 2018.

165 Suez et al., 2014.

166 Feehley & Nagler, 2014.

167 Spinks, 2014.

gas.¹⁶⁸ Consequently, native wildlife such as orangutans, elephants, and tigers have lost habitat with only 15% of these species surviving the transition from forest to palm oil plantation.¹⁶⁹ The change also comes at a cost to human health, since smoke from burning of the forest to prepare for the cultivation of palm oil brings exposure to particulate matter.¹⁷⁰

Regional produce

Consult the following websites for provincial produce guides:

Province	Site
British Columbia	We Heart Local B.C local
Alberta	Alberta Agriculture and Forestry: availability of Alberta grown crops, commercial
Saskatchewan	Pick your own: Saskatchewan guide
Manitoba	Manitoba Agriculture: Manitoba local produce guide
Ontario	Foodland Ontario: Availability guide
Québec	Équiterre: produits de saison
New Brunswick	The Spruce Eats: New Brunswick seasonal fruits and vegetables
Newfoundland and Labrador	Newfoundland and Labrador Farm Guide
Nova Scotia	Select Nova Scotia: Seasonal Availability
Prince Edward Island	Canada's Food Island: What's in Season

While it is difficult to learn about and influence the working conditions under which most purchased food is produced, buying produce directly from regional producers can provide greater access to this information: even in Canada, migrant workers can have limited access to labour rights. See the 2015 report [Status of Migrant Farm Workers in Canada](#), (published by United Food and Commercial Workers Canada and the Agriculture Workers Alliance) as well as [Farm Workers in Western Canada: Injustices and Activism](#) (published by the University of Alberta Press).

168 Scientific American, n.d.
 169 Nicholas et al., 2017.
 170 Goodman & Kulik, 2015.

Fresh vs canned vs frozen produce

In terms of nutritional content, fresh produce is only superior if consumed immediately post-harvest. Otherwise, the nutritional value of fresh, canned or frozen produce is relatively similar (although canned vegetables may be high in sodium).¹⁷¹

There are few studies comparing the environmental impact of frozen and of canned produce. Most are completed by steel-affiliated industries, which conclude that canned food uses less energy than frozen food. The energy used to store frozen food represents the main environmental impact of frozen produce, while the energy used to manufacture steel cans represents the main the environmental impact of canned food.¹⁷²

However, transportation can play a large role in the environmental impact of frozen and canned produce. While how far away the food is produced plays a role in food's environmental impact, the mode of transportation can be even more important. Air transportation produces the greatest volume of carbon emissions: increased use of ship and rail transportation is desirable, as well as maximizing truckloads in road transportation.¹⁷³ While it can be difficult to transportation-related emissions of various options, in some cases it is clear (for example, fresh beans from California would have more transportation-related emissions than canned ones from Ontario).

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.¹⁷⁴ 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 assessment by Health Canada to ensure it is safe for human consumption.¹⁷⁵ Genetic engineering is used in several different forms of pesticides (a term that includes herbicides, insecticides and fungicides)¹⁷⁶. GM crops are commonly genetically engineered to resist

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Brown, 2017.

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Institute for Environmental Research and Education, 2007.

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Wakeland et al., 2012.

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Gepts, 2001.

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Health Canada, 2012.

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Canadian Biotechnology Action Network (cban.ca)

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.¹⁷⁷ 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^{178 179}. However, Health Care Without Harm encourages healthcare facilities to refrain from purchasing genetically engineered foods due to evidence of risks worldwide.¹⁸⁰ In Canada, four GM crops are currently grown: corn, soybean, canola, and sugar beet.¹⁸¹

Imported produce

In 2017, the top vegetables (including field and greenhouse) imported into Canada were tomatoes, lettuce, peppers and cabbages. The top imports from the United States were lettuce, cabbage and broccoli/cauliflower, whereas imports from Mexico consisted primarily of tomatoes, peppers and cucumbers/gherkins.¹⁸²

It is important to be aware of your supplier's source for produce. In 2014, the Los Angeles Times published an 18 month investigative report exposing inhumane labour conditions, including child labour at produce farms in Mexico for export to the United States¹⁸³—and it would be safe to assume that there are similar issues with exports to Canada.

Pesticides, fertilizers

THE ENVIRONMENTAL PERSPECTIVE

Pesticides can pose risks to all ecosystems: terrestrial, aerial, and most significantly, aquatic and marine. From 1981 to 2011, Agriculture and Agri-Food Canada assessed the risk of water contamination by pesticides across Canada. Within this period of time, they found the risk had risen by up to 50% due to an increase in the area treated by pesticides and by unusual wet weather.¹⁸⁴ In a review published in *Science*, researchers additionally argued that studies on pesticides in the environment fail to account for the

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Gilbert, 2013.

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Dietitians of Canada, n.d.

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Health Canada, 2018.

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Healthcare Without Harm, n.d.

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Dietitians of Canada, n.d.

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Agriculture and Agri-Food Canada, 2017.

183

Morosi & Bartletti, 2014.

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Agriculture and Agri-Food Canada, 2011.

diversity in environmental conditions and the transformations of those pesticides in the environment, particularly by microorganisms, which are not replicable in laboratory settings.¹⁸⁵

Fertilizers—which are primarily composed of the elements nitrogen, phosphorus and potassium—can also affect water quality. From 1981 to 2011, Agriculture and Agri-Food Canada found that the risk of nitrogen loss through leaching into ground and surface water had increased by up to 36%. This can lead to algal blooms, acidification, and increase in greenhouse gas emissions.¹⁸⁶ Within the same period of time, the risk of phosphorus contamination increased by up to 50%, contributing to eutrophication and algal blooms.¹⁸⁷

THE HUMAN HEALTH PERSPECTIVE

Health Canada sets a maximum residue level for pesticides on food well below the residue level that could pose a health concern.¹⁸⁸ The annual publication of Environmental Working Group’s “Dirty Dozen” highlights the top 12 fruits and vegetables which contain the highest amounts of pesticide residue: however, it is important to recognize the context of this report with regard to human consumption. Pesticide residue (product of food consumption and residue level) is not equivalent to the direct pesticide exposure that occurs during production. A study in the *Journal of Toxicology* estimated average pesticide exposure from consuming the 12 fruits and vegetables using a database of 2000 people.¹⁸⁹ This estimate was then compared to the reference dose, which is an estimate of the amount of a chemical that a person could be exposed to on a daily basis throughout the person’s lifetime that is likely to carry no appreciable risk of harm.¹⁹⁰ The study found that in 90% of the comparisons, the average pesticide exposure was 1000 times less than the reference dose.

Although pesticide exposure may be low, there are also indirect and chronic human health impacts. There is much uncertainty regarding the synergistic effects of exposure to multiple pesticides, particularly in low doses over a long period of time. This is of particular interest to those who may live near agricultural operations, or who work directly with pesticides. A study published in *Frontiers in Public Health* found the following:

185 Fenner et al., 2013.
 186 Agriculture and Agri-Food Canada, 2011.
 187 Agriculture and Agri-Food Canada, 2011.
 188 Health Canada, 2015.
 189 Winter & Katz, 2011.
 190 Winter & Francis, 1997.

“The combination of substances with probably carcinogenic or endocrine-disrupting effects may produce unknown adverse health effects. Therefore, the determination of “safe” levels of exposure to single pesticides may underestimate the real health effects, ignoring also the chronic exposure to multiple chemical substances.”¹⁹¹

When working towards a sustainable diet that supports reduced synthetic chemical use overall, choose organic whenever possible.

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.

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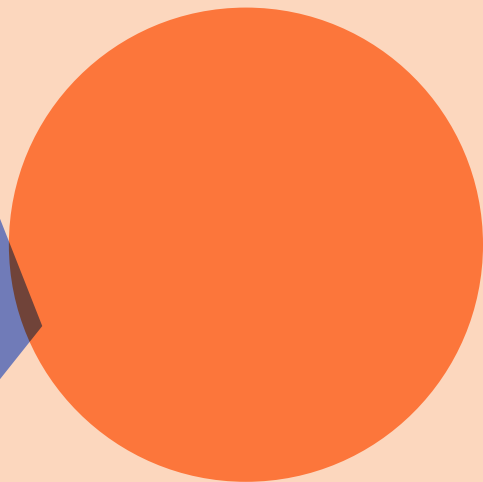
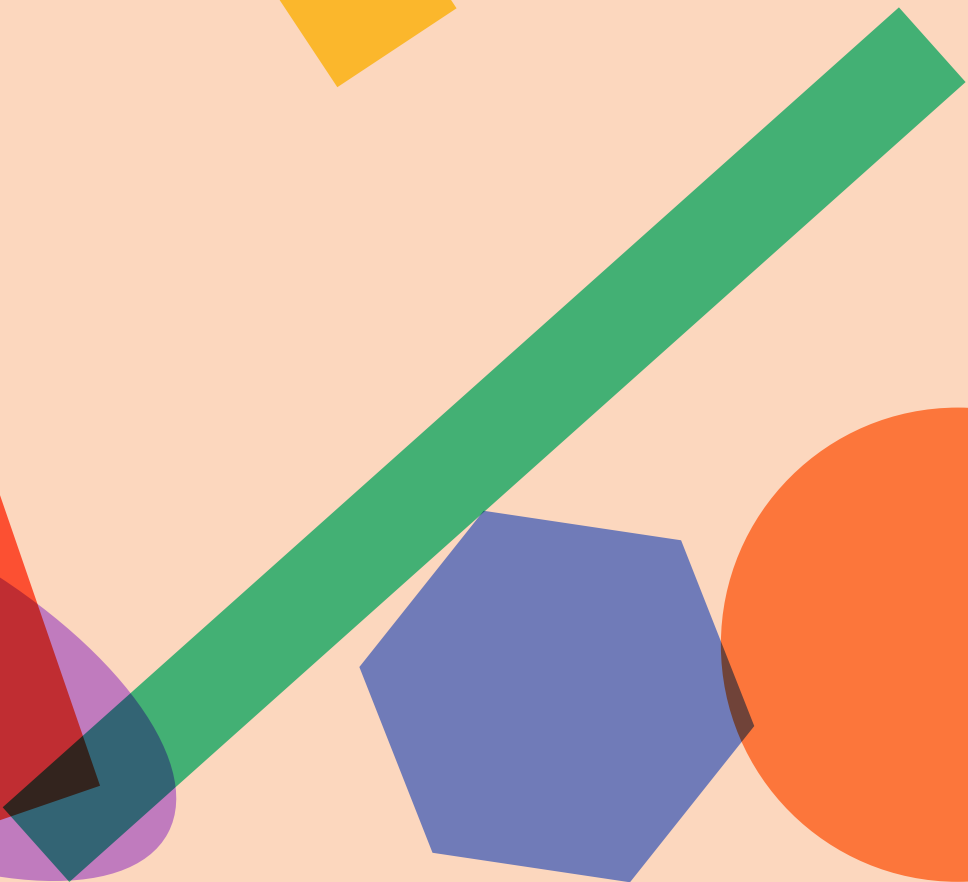
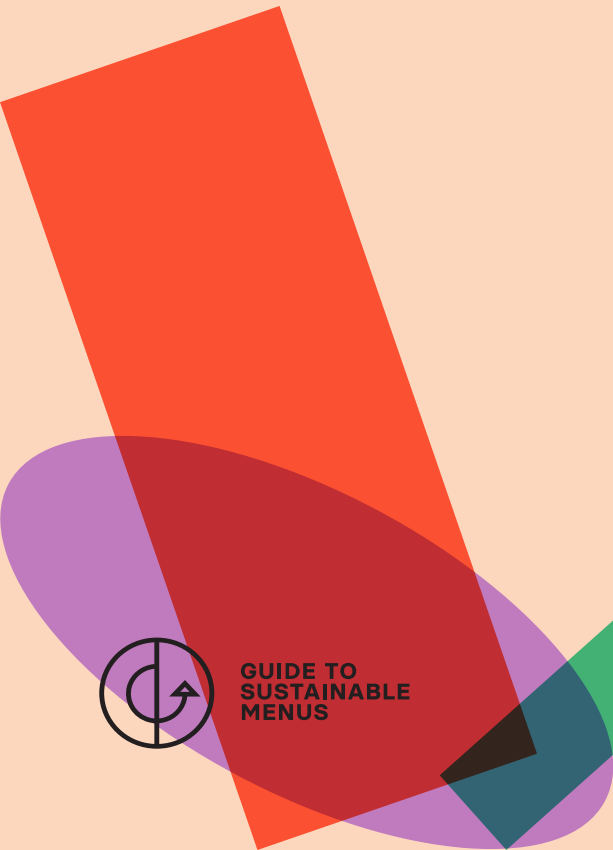
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