



nutripro[®]

NESTLÉ PROFESSIONAL NUTRITION MAGAZINE

More Plants on the Plate

Plants to
feed the
World

Understanding
Plant-based diets

Cooking
with Plants

A single, long, orange carrot with a green leafy top, positioned horizontally. The carrot is whole and appears fresh, with a slight curve. The green leaves are at the left end, and the orange root extends to the right.

As a food service expert, it's important for you to stay on top of these rising trends. Of course, you don't have to abandon your existing menu, but by catering to both people who eat foods and beverages from animal sources and people who avoid them, you can expand your offerings to serve a wider range of consumers.

From an occasional meatless meal to a strict vegan diet, you'll know just what it takes to keep every guest satisfied.

IN 2020,
THE U.S. RETAIL
PLANT-BASED FOOD
MARKET GREW
27.1%



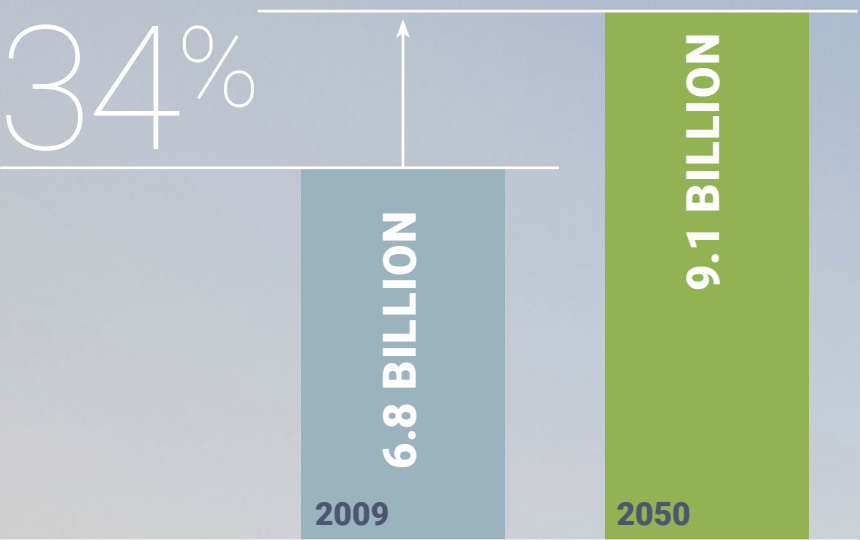
39%
**OF EUROPEAN
SHOPPERS ARE
BUYING VEGETARIAN
FOOD OPTIONS.²**



42%
OF GLOBAL CUSTOMERS SAY THAT THEY ARE
RESTRICTING CERTAIN
ANIMAL-BASED
PRODUCTS.⁵

PLANTS TO FEED THE *world*⁶

BY 2050 THE GLOBAL POPULATION WILL INCREASE



BY THAT TIME, ABOUT 70% OF THE WORLD'S POPULATION WILL BE URBAN, UP FROM 49% IN 2009.

TO FEED THIS LARGER, WEALTHIER, URBAN POPULATION, FOOD PRODUCTION WILL NEED TO INCREASE BY:

70%

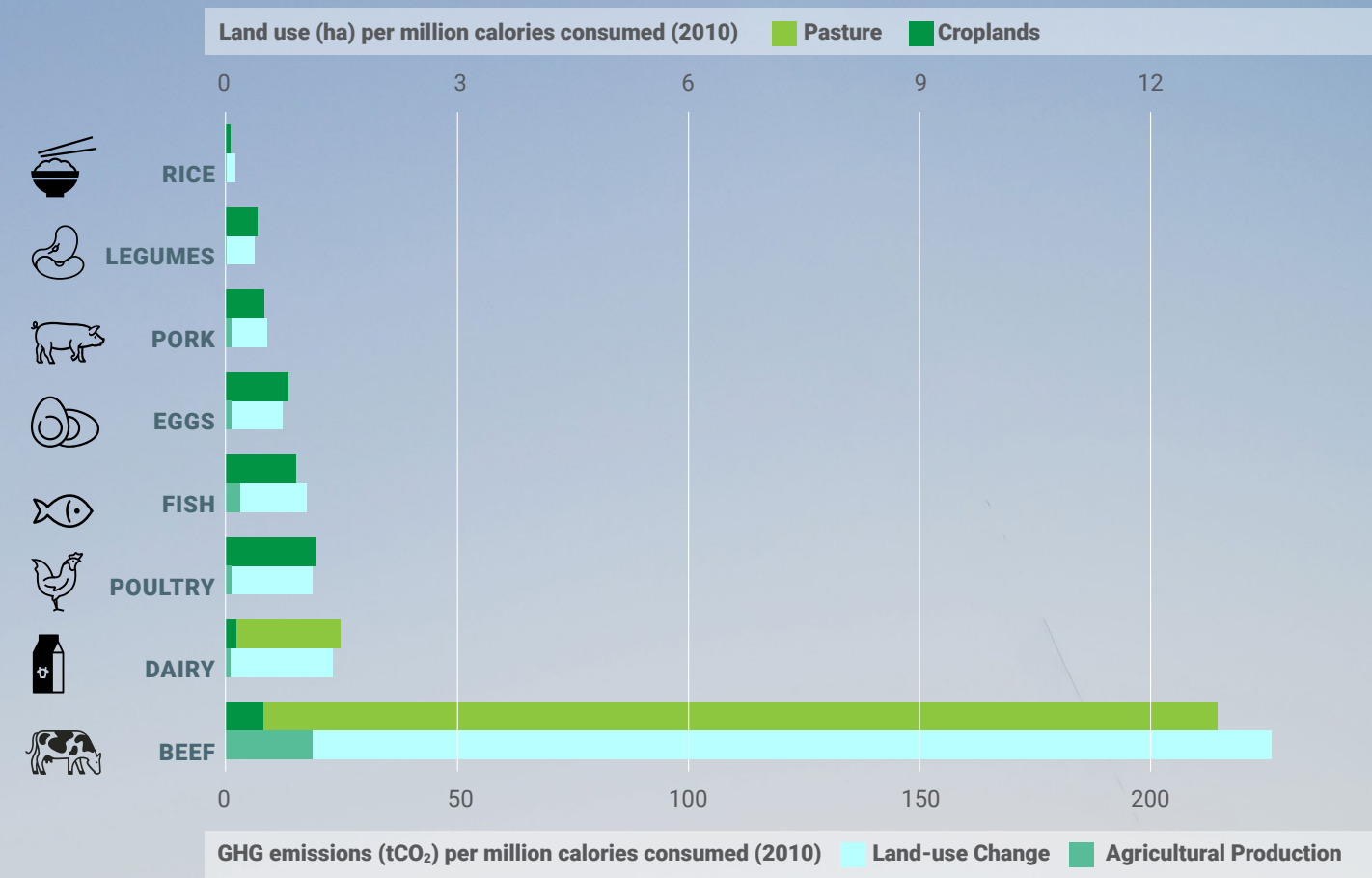
THROUGH 2050

THERE IS SIMPLY **NOT ENOUGH LAND TO FEED 9 BILLION** THE CURRENT DIET.

OUR CURRENT FOOD SYSTEM USES⁷



ANIMAL-BASED FOODS ARE MORE RESOURCE-INTENSIVE THAN PLANT-BASED FOODS⁸



LAND

The world has considerable land reserves which could in theory be converted to arable land. However, the extent to which this can be realized is rather limited.

WATER

At global scale, there are sufficient fresh water reserve capacities, but these are very unevenly distributed.

BIODIVERSITY

Biodiversity is threatened by urbanization, deforestation, pollution and the conversion of wetlands.

SHIFTING TOWARD A MORE PLANT-BASED DIET

Beef, the most commonly consumed ruminant meat, is resource-intensive to produce, requiring 20 times more land and emitting 20 times more GHGs per gram of edible protein than common plant proteins, such as beans, peas and lentils. Limiting ruminant meat consumption would reduce the GHG mitigation gap by half and nearly close the land gap.⁸

UNDERSTANDING *Plant-based Diets*

There are many different approaches to plant-based eating, from people who simply want to eat meat less often to people who consume no animal products or by-products of any kind.

A RANGE OF OPTIONS

Flexitarian: actively chooses to eat less meat, whether that means reducing the amount on the plate or avoiding meat on certain days of the week.

Vegetarian: does not eat meat of any kind, but may consume animal by-products.

Lacto-ovo vegetarian:
Eats dairy products and eggs, but not meat.

Ovo-vegetarian:
Eats eggs, but not dairy products or meat.

Lacto-vegetarian:
Eats dairy products, but not eggs or meat.

Vegan: does not eat meat, eggs, dairy products, or any other ingredients created from or produced by animals, including honey.

WHY PEOPLE ARE EATING MORE PLANTS

Like many lifestyle choices, there are multiple reasons people might choose to follow a plant-based diet. Understanding these reasons can help you connect with your guests and shape your menu around their preferences.

Health

Plant-based foods can be a good source of vitamins, minerals, dietary fibre, and even unsaturated fatty acids and protein. Some people reduce or eliminate animal products from their diet because of dietary intolerances (like dairy), cardiovascular health, or general well-being.

Affordability

Another factor for some who choose to eat less meat is cost. For example, dried beans and rice are a cost-effective alternative to high-priced meat products, and they are also a good source of protein.

Ethics

Others choose not to eat meat because of ethical reasons and their interest in animal welfare. Common consumer concerns focus on the uncontrolled use of antibiotics or the animal's living conditions.

Religion

Several religions advise their followers to avoid eating meat or animal-based products. For example, Hindus and Buddhists have a strong tradition of vegetarianism.

Sustainability

Still another reason that people limit meat from their diets is concern for the environmental impact, whereas plant-based diets represent a major opportunity to reduce greenhouse gas emissions (GHGs).⁹

Sensory and Preference

Finally, there are some people who simply don't enjoy eating animal products due to their characteristic taste, texture, or smell.

Getting PROTEIN

WHAT IS PROTEIN?

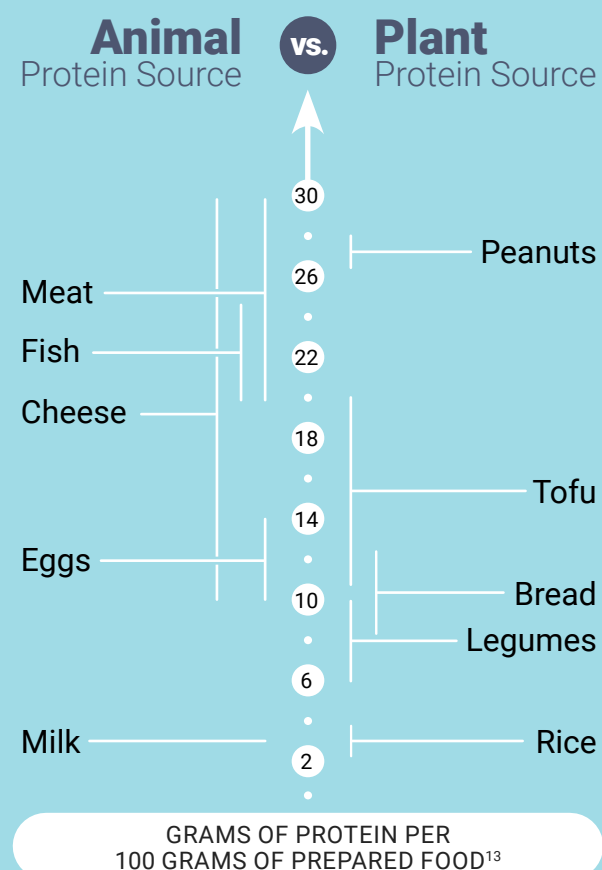
Protein is one of the three essential macronutrients—together with fat and carbohydrates. Proteins are large molecules made up of different combinations of smaller units, called amino acids. Our bodies need 20 amino acids: 9 of them are considered essential amino acids and can be obtained only from food—as our bodies can't produce them—while the others are considered non-essential, because they can be synthesized by the human body.¹⁰

WHY DO WE NEED IT?

Proteins are essential for the human body and adequate consumption levels are important. Proteins participate in biological processes, and they provide amino acids that contribute to growth and maintain muscle mass. They also contribute to the maintenance of bones.¹¹

HOW MUCH DO WE NEED?

Protein requirements can vary by age, weight, gender, and level of physical activity but the basic daily recommendation for protein intake is 0.80 grams per kilogram of body weight in healthy adults with modest levels of physical activity. This translates into 48g of protein for a 60 kg person.¹²



Complete your profile

Some foods contain all of the essential amino acids you need in sufficient quantities. These are known as complete protein sources. Along with meat, seafood, eggs, and dairy, you can also get complete proteins from plants such as quinoa, buckwheat, amaranth, soy, hemp, and chia seeds.

Foods that don't contain all nine essential amino-acids are known as incomplete protein sources. While they don't offer enough essential amino acids on their own, they can be combined with a variety of other foods throughout the day to provide an adequate intake of proteins. Examples include nuts and seeds, legumes, grains, and vegetables.¹⁴

complementary proteins ACROSS CULTURES

You don't have to look far to find examples of foods that complement each other to provide all of the amino acids you need. All around the world, traditional dishes have found a way to satisfy people's hunger, tastes, and basic protein needs by relying on plant crops. Traditional plant-based dishes that offer a complete amino acid profile include:

Mexico: Black beans with corn and/or rice

Lebanon: Falafel and tahini-based sauce

Morocco: Couscous with chickpeas

Ethiopia: Injera (flat bread made with teff flour) with wat (lentil stew)

Punjab region, North India: Kaali daal (black lentils) with rice

Switzerland: Muesli (nuts and grains)

South Africa: Samp (corn) and beans

PLANT-BASED *Beverages*

From the grocery store to the local coffee shop

Dairy alternatives are everywhere, and consumers are eager to embrace them. In fact, plant-based alternatives make up \$19 billion USD of the nearly \$184 billion global dairy market in 2022, and the per capita consumption of dairy alternatives is equal to 10% of the per capita consumption of milk products.¹⁵

In general, you can substitute any plant-based milk 1:1, except in recipes where the protein plays an important structural role (e.g. baked applications).

You can also try combining beverages like soy or oat and pea to improve the quality of protein.

You may want to consider the differences in flavour and nutrition. Many milk alternatives have added sugar to mask the "beany" or "cerealy" flavours and to replicate the sweetness naturally found in milk (due to its lactose content). In many countries, milk may also be fortified with key nutrients (like vitamins A & D), so look for options that have no (or low) added sugars and contain the same fortified nutrients as milk.

Milk & Plant-based Alternatives¹³

Samples are arranged according to protein content.

Information is based on available databases and does not represent all products in the market.


Nutritional values per 100 ml



Whole Milk (Cow)	Pea	Soy	Oat	Coconut	Almond	Rice
3.3g PROTEIN	3.3g PROTEIN	2.6g PROTEIN	1.3g PROTEIN	1.3g PROTEIN	0.6g PROTEIN	0.3g PROTEIN
60 KCAL	29 KCAL	43 KCAL	50 KCAL	75 KCAL	15 KCAL	47 KCAL
3.2g FAT	1.9g FAT	1.5g FAT	2.1g FAT	7.5g FAT	1.1g FAT	1g FAT

DID YOU KNOW?

Grains and legumes tend to be complementary proteins. Mixing rice and pea beverages can form a complete source of protein; soy beverage is a complete source on its own.



the beauty of PLANTS

Plants can be more than just a source of protein—it's no wonder that they make up so much of what people eat. They're colourful, flavourful, and as shown here, full of nutrients that are important for human health. In fact, many countries around the world recommend eating at least five servings of fruits and vegetables per day,¹⁶ in any form including fresh, frozen, tinned, and dried.

Mushrooms of all varieties are low in calories and fat, and contain modest amounts of fibre and various nutrients.¹⁴

Sweet potatoes are a source of beta-carotene (a precursor to vitamin A).¹⁴

Legumes and pulses are a source of protein, folates, iron and fibre (both insoluble and soluble).¹⁴

Kale is a source of vitamin K, vitamin A and vitamin C and it belongs to the cruciferous family.¹⁴

Oats are available in a variety of forms and they are source of fibre (insoluble and soluble) and phosphorus, among others.¹⁴

Yellow and orange fruits and vegetables are typically a good source of vitamin C and beta-carotene (a form of vitamin A).¹⁴

Seeds contain polyunsaturated fat (as omega-3 fatty acids), fibre, protein and calcium.¹⁴



KEEPING

a watchful eye

Anti-nutrition

Some plants have anti-nutritional factors that can interfere with the absorption of nutrients or can even be toxic.

Potatoes should not be eaten once they've started to sprout because of elevated levels of glycoalkaloid (a toxin) and nitrates. Avoid storing them too long, and keep them in the dark to help prevent germination.

Soy Beans contain a natural toxin called a trypsin inhibitor which can stop proper digestion. The toxin is destroyed by proper cooking, so when using dried beans, soak them overnight and simmer for three hours before eating.

Hidden Animal-based Ingredients

While meat, eggs, and dairy milk are easy to identify, there are other foods where the presence of animal products is not so obvious. To respect your guests' wishes, double-check the following ingredients as requested.

Hidden Dairy Ingredients

Coffee creamer and some alternative dairy sources

May contain casein from milk

Bread and baked goods

May contain whey from milk

Protein powder

May contain whey from milk

Hidden Animal Ingredients

Gelatin, pudding, marshmallows and gummy candies

Gelatin is made with bone or hides and is a common ingredient in confections

Soups

Check label for bone broth

Breads and baked goods

Check label for L-cysteine, used as a dough conditioner derived from animal sources

Hidden Egg Ingredients

Sauces, salad dressings, meringue

Other Animal Products

Honey

Serving IT UP



Integrating more plants into your menu? Here are some ideas to expand your plant-based options.

Planning a plant-based meal

1. Select the category of your dish.
Is it a roast, soup or stew, or multi-component main dish?
2. Choose your anchor vegetables.
What's in season?
3. Consider how it can be prepared and choose your cooking method.
4. Plan your spices and seasonings around your choices.
5. Add balance from a nutritional perspective. Can you combine foods to provide a complete protein?
6. Enhance your plating, with complementary colours, shapes, flavours, and textures.

Add appeal to plants

Use interesting textures to intrigue the senses. Try roasting vegetables for a crispy feel, or oven-dry them to concentrate the flavours, increasing the "meaty" texture. You can also combine vegetables with raw nuts and seeds to provide varying levels of crunchiness.

Try unusual spice and flavour combinations.

This is a good way to complement or accent the flavours of the produce. For example, nutmeg is good with root vegetables such as sweet potatoes, potatoes, and pumpkins. Cumin and coriander go well with sweet vegetables like beets. And mustard complements cabbage, broccoli, sprouts, and kale. Smoking or grilling fruits and vegetables can also enhance their flavour profile.

Experiment with the form of the dish.

Just by slicing vegetables differently, you can create a different experience. Try serving a portabello mushroom as a "steak," slice cucumber or zucchini into ribbons and serve in place of pasta, or use a ricer on cooked cauliflower. You can even cook carrots and puree them into a foam or blend with pulses for hummus.

Make room on the menu

It's a good idea to integrate vegan and vegetarian dishes with the rest of the menu. This draws more attention to your plant-based recipes and avoids creating a stigma around non-meat dishes. Make sure your descriptions are just as cravable as the rest of the menu, and these dishes may become some of your guests' new favourites.

Choosing an alternative centre of plate

Putting protein on the plate drives satiety and delays digestion. If you're not using meat in your dish, there are many other interesting ways to provide bulk and quiet hunger pangs. While some of these options are also good sources of protein, others need to be combined with different foods in order to provide a complete protein.

Plant-based meat alternatives

Close to familiar meat form and texture. May contain spices or other flavouring to simulate meat taste. Substitute wherever you would use meat.

Tofu

Comes in many forms including extra firm, firm, soft and silken. Soft, smooth and flavourless on its own, it is a prime candidate for flavourful marinades, sauces, and seasonings. Add to soups, stir-fries, and scrambles.

Tempeh

Sold in flat, rectangular pieces. Has a slightly earthy taste and chewy texture. Crumble and add to soups, salads, or pasta, or serve in a sandwich.

Seitan

Made from cooked wheat gluten, it has a chewy texture and is a good source of protein. It's commonly used in Asian dishes.

Pulses (beans and lentils)

Available dry or canned. Firm texture, may have slightly nutty flavour. Add to soups, salads, stews or casseroles, or make into "meat"balls.

Mushrooms

Porcini, shiitake, and portabello mushrooms add umami flavour and hearty texture. Can be eaten raw, cooked in salads, sauces, soups, and sandwiches, or grilled.

Jackfruit*

Choose unripe or canned in water or brine to avoid sweetness. Grill and shred like pulled pork, slice into "steaks," or add to stir-fries and salads.

Cauliflower*

Mild taste absorbs flavours easily. Chop and eat raw, slice into "steaks" and oven roast, add to curries and stir-fries, or boil and mash or put through a ricer.

Tubers*

Cost-effective, filling, and absorbs flavours readily. Boil, bake, roast, mash, or fry. Try sweet potatoes with black beans in enchiladas.

Bulbs*

Fennel and artichokes add textural interest and presence on the plate. Roast with olive oil and add to salads or dips.

Beetroot*

Roasted and caramelized, it plates nicely and adds rich colour. Roast or boil and add to soups or salads.

Nuts & peanuts

Enhance food with a nutty flavour and crunch. Add to salads, pasta, desserts, etc.

*Not a good source of protein.

COOKING

WITHOUT ANIMAL-BASED INGREDIENTS

Milk, eggs, and other animal-based ingredients often perform functional roles in cooking, so it can be a challenge to replace them. Finding a suitable alternative depends on their role in the original recipe. While substitution is an experimental process, the following tips and tricks are a good place to start.

EGG SUBSTITUTES

Eggs may serve more than one purpose in a recipe. To choose an appropriate replacement, consider their function in your dish.

Coagulation/Gelation: A typical custard or flan recipe uses one egg to set 250 ml of full-cream milk with 25 g of added sugar. To replace the egg, substitute a combination of 3-4 g (1 tsp) corn starch + 0.5 g gum. Depending on the fat content of the milk, the amount of sugar, and additional ingredients in the recipe, this might have to be adjusted. If you are also replacing the milk with a plant-based alternative, add a pinch of salt to set the gel.

Emulsification: Eggs help incorporate oil and water-based liquids together into a stable substance. To replace them in salad dressings and mayonnaise substitute 5 g (1 tsp) lecithin + 0.5 g gum for one egg yolk. (Note that some lecithin is animal-based, so look for soy-based alternatives.) In sweet batters, combine thick fruit purées (like apple or banana) with the lecithin and gum to emulsify and add body to the recipe.

Foaming: The foaming ability of egg whites aerates foods to make them light and fluffy. When making mousses and terrines, replace egg whites with whippable non-dairy creams especially formulated for this purpose. In baked goods, you can replace eggs by increasing the amount of baking powder/ baking soda and adding a teaspoon of vinegar/lemon juice for taste.

Colour: Instead of relying on eggs for browning, use a pinch of turmeric to add a light golden touch. Be careful not to overdo it, as turmeric could also impart its flavour.

Texture: Eggs are also used for binding, or holding ingredients together. To bind savoury dishes without eggs, try adding mashed potatoes, rice flour, or wheat or corn starch to thicken the recipe. In cake batters, mashed banana, apple puree, and a pinch of gum or corn starch will give a nice thick texture to the batter. In gluten-free recipes, create a slurry of 1 tbsp flax seed dissolved in 3 tbsp water and set it aside until sticky, then use this in place of egg.

Taste: Eggs add a richness to the flavour of baked goods, desserts, sauces, and dressings. Add a teaspoon of nut, sunflower, or olive oil to compensate for every egg removed in these recipes.

MILK SUBSTITUTES

Like eggs, milk has several functions in food, so there are no universally fail-proof substitutes.

Liquids: In beverages and pourable applications (like dressings and sauces), you can typically use a 1:1 substitution with plant-based dairy alternatives, vegetable broths, fruit juices, or water, depending on the recipe.

Other dishes: In more complex recipes, milk's protein, fats, carbohydrates, salts, and minerals may affect the dish's functionality. Several plant-based dairy alternatives for milk, cream, and yogurt, each with its own formulation and functionality, are commercially available, but finding the most suitable replacement for each recipe involves trial and error. You may need to adjust the flavour by adding a pinch of salt, sugar, or a squeeze of lemon to balance sweetness, saltiness, and acidity. For baked custards, batters, and egg & milk emulsions, add 1 g of additional salt per 250 ml of milk alternative.

GELATIN SUBSTITUTES

Bovine gelatin is used to set gels, moulded desserts, and candies, and sometimes to add a transparent coating or glaze to appetizers or fruit desserts. To replicate its setting ability, substitute the same amount of powdered agar (derived from seaweed) or carrageenan. Approximately 2 g of agar will set 250 ml of liquid. Alternatively, gums (from guar, xanthan, or locust bean) can also be used. One gram of gum will provide the same functionality as 3 g of gelatin or 2 g of agar.

HONEY SUBSTITUTES

Honey's primary function is to add sweetness or flavour to recipes. While the flavour is unique and can't be replicated by plant-based ingredients, you can substitute maple syrup, agave syrup, or brown sugar in a 1:1 ratio to provide sweetness.

Every day more of us are relying on plants for the nutrition and flavour we crave. While this shift is inevitable if we want to feed the world, it's also an exciting opportunity to expand your culinary repertoire. From grains to fruits, vegetables, herbs, and spices, the world of plant-based ingredients is full of colours, flavours, textures, and nutrients, all ripe and ready for you to satisfy your customers.

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