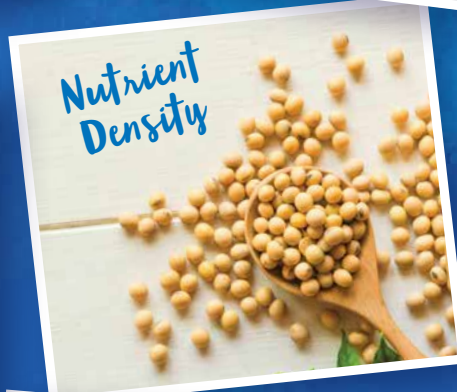


CHOOSE A COMBINATION OF DAIRY AND PLANT-BASED FOODS FOR A VARIETY OF BENEFITS



DANONE
NORTH AMERICA

Certified
B
Corporation

WHY CHOOSE DAIRY & PLANT-BASED FOODS?

Following a healthy eating pattern—that includes a variety of nutrient-dense foods—is an important first step toward achieving a balanced diet and healthy lifestyle.

STATE OF THE AMERICAN DIET

The average American diet is more unbalanced than ever, the result of an eating pattern that is low in vegetables, fruits, and dairy and high in saturated fat, sodium, and added sugars.^{1,2} Unhealthy diets have become a significant public health issue, leading to overweight individuals, obesity, and other diet-related diseases, such as cardiovascular disease, type-2 diabetes, and high blood pressure.³

The major contributors to an unbalanced diet are added sugars, saturated fat, and sodium.^{2,3} The 2020-2025 Dietary Guidelines for Americans (DGA) recommend that calories from added sugar and saturated fats each not exceed 10% of the total calories in the diet, and the American Heart Association (AHA) recommends that sodium intake be limited to 1,500 mg a day.^{2,4} Unfortunately, the average American diet greatly exceeds all of these recommendations.^{1,2} The saturated fat and added sugar recommendations from the DGA should be incorporated as part of a healthy eating pattern and should not be applied to individual foods.

The DGA explain that food groups and nutrients are not consumed in isolation but in combination; therefore, it is the totality of the diet that forms the overall eating pattern.² While achieving balance is possible, extreme dietary patterns that exclude or limit food groups also have the potential to adversely affect nutrient intakes. Excessive intake of unhealthy foods and inadequate intake of nutrient-dense foods results in lower-than-recommended levels of some nutrients in the American diet, including potassium, dietary fiber, choline, magnesium, calcium, and vitamins A, D, E, K and C. Of these, calcium, vitamin D, potassium, and fiber are considered nutrients of public health concern because low intakes are associated with health concerns.^{2,3}



HEALTHY EATING PATTERNS

The DGA recommend consuming a healthy eating pattern that accounts for all foods and beverages within an appropriate calorie level.²

A HEALTHY EATING PATTERN INCLUDES:²

- A variety of vegetables from all of the subgroups—dark green, red and orange, legumes (beans, peas, and lentils), starchy, and other.
- Fruits, especially whole fruits.
- Grains, at least half of which are whole grains.
- Nonfat or low fat dairy, including milk, yogurt, cheese, and/or fortified soy beverages.
- A variety of protein foods, including seafood, lean meats and poultry, eggs, legumes (beans, peas, and lentils) and nuts, seeds, and soy products (particularly tofu and other soy products).
- Oils.

A healthy eating pattern also limits saturated fats and trans fats, added sugars, and sodium.² These components should be cut back to amounts that fit within an overall healthy eating pattern while still honoring an individual's cultural and personal needs and preferences.² Tailoring an eating pattern to suit an individual's needs helps make it easier to maintain.²

There is strong evidence that healthy eating patterns are associated with heart health and healthier weight outcomes.²

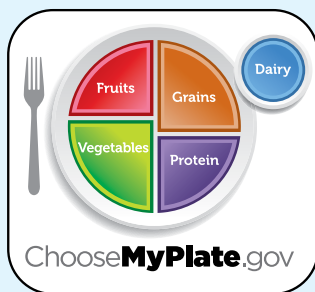


NUTRITION GAPS

The DGA recommend increasing intake of nutrient-dense foods, such as fruits, vegetables, whole grains, low fat or nonfat dairy, protein foods (lean meats and poultry, seafood, eggs, nuts, seeds, legumes, and soy), and plant-based oils.^{2,3}

Currently, Americans consume only about half of the recommended three servings per day of dairy products. A recent study compared popular snack foods by their overall nutrient profiles. The study utilized a nutrient-density measurement tool known as the Nutrient Rich Foods (NRF) Index 10.3. Yogurt was found to have the highest nutrient-density score, but was the least consumed among the snack foods evaluated.⁵ Low

fat and nonfat dairy, fortified with vitamin D, provide nutrients of public health concern such as calcium, potassium, and vitamin D. Strategies for increasing intake of nonfat and low fat dairy include choosing yogurt as a snack or using yogurt in salad dressings and spreads. The DGA consider fortified soymilk—containing calcium, vitamin A, and vitamin D—an appropriate dairy alternative because its overall nutrient composition is similar to dairy. Using soymilk in smoothies and recipes that call for milk is an additional approach to provide nutrients of concern.



The 2020 DGA recommend that people shift to consume more fruits and vegetables; choose whole-grains foods for at least half of all grains consumed; and consume a greater variety of protein foods, especially nutrient-dense protein options like the ones listed above.^{2,3} Currently, nearly the entire U.S. population is eating fewer fruits, vegetables, and whole grains than recommended.¹ Plant-based foods will help provide nutrients of concern, like potassium, fiber, and calcium, as well as other shortfall nutrients like vitamin A, vitamin C, and folate. One way to eat more plant-based foods is to choose a salad or vegetable as a side dish or add vegetables and fruits to mixed dishes.^{2,3}

An example of a nutrient-dense snack that includes both dairy and plant-based foods is an apple with low fat or nonfat cheese, yogurt topped with nuts or berries, or a smoothie made with soymilk, yogurt, fruits, and veggies.



IMPROVED NUTRIENT DENSITY

A nutrient-dense food has more of the nutrients to encourage, relative to the amount of calories. In general, by eating more nutrient-dense foods, like vegetables, fruits, whole grains, dairy, and fortified soymilks, one can increase their intake of the nutrients of public health concern. For example, vegetables, fruits, and whole grains provide dietary fiber. Vegetables, fruits, and dairy provide potassium. Dairy provides calcium as well. Most yogurts and fortified soymilks contain potassium and calcium, two important nutrients of concern. One 6-oz serving of nonfat or lowfat yogurt, or 1 cup of fortified soymilk, every day provides, in many cases, 6-30% of the daily value for calcium. Additionally, choosing a vitamin D-fortified yogurt or fortified soymilk can make a significant contribution to vitamin D intake. Yogurt and fortified soymilk can both also be an excellent source of complete protein, which helps with satiety, and together with calcium and vitamin D, helps promote muscle and bone strength.⁶ Lowfat and nonfat yogurts and fortified soymilks are also good choices to help achieve daily requirements.



Other fortified plant-based beverages and yogurt alternatives can be good sources of calcium and vitamin D. Soymilk and soy-based yogurt alternatives also provide complete plant-based protein.

In a large prospective study, consumption of yogurt was associated with a more balanced diet.⁷ According to this study, yogurt consumers are not only likely to have higher potassium intakes, but are also less likely to have inadequate intakes of vitamins B2 and B12, calcium, magnesium, and zinc. In addition, according to the DGA, if a healthy eating pattern is consumed, calcium, potassium, and dietary fiber recommendations are more likely to be met.

COMPLETE PROTEIN

Protein quality is determined by the amino acid profile of the protein, including whether there is an adequate proportion of the nine essential amino acids, as well as the digestibility of those amino acids.

Dairy, including yogurt, is a good source of complete protein. Soy products have also been recognized for their complete protein.⁸ Within the milk alternatives category, soymilk has the highest protein content—almost the same as cow's milk—and is the only plant-based source of complete protein.

WEIGHT MANAGEMENT

An epidemiological study showed that frequent yogurt consumption, as part of a healthy dietary pattern, was associated with less weight gain over time.⁹ This study compared consumption of different foods, including yogurt, fruits, vegetables, and whole grains among more than 120,000 U.S. women and men and showed that consumption of these foods was associated with less weight gain over time, with yogurt showing the best results. Other forms of dairy, including low fat or nonfat milk, had no measurable association with less weight gain.



Findings from a recent randomized controlled trial suggest that vegetarian proteins (soy) are a good alternative to meat-based proteins as part of weight management diets.¹⁰ The study assessed the impact of a soy high protein diet compared to a meat high protein diet in healthy

overweight men for a 2-week period. Appetite control and weight loss were similar between the two groups studied, which suggests vegetarian proteins (soy) can be as effective as meat-based diets in weight management.

A 12-month randomized clinical trial studied the impact of consuming soy protein as part of an energy-restricted, high protein diet on weight, body composition and cardiometabolic health.¹¹ Subjects were randomly assigned to either a high protein diet including 3 daily soy products or a high protein diet (lean and minimally processed) that restricted soy. Body weight reductions, changes in body fat mass loss, and weight-loss induced improvements (in cholesterol, triglycerides and blood pressure) were not different between the two groups suggesting soy protein was as effective as other lean, minimally processed protein in weight management, when consumed as part of a reduced calorie, high-protein diet.



An increased intake of fruits and vegetables was associated with a reduced long-term risk of obesity and weight gain, in a large prospective study.¹² Similar results were found in a meta-analysis (covering 3 large studies over 24 years) suggesting an inverse association between an increased consumption of fruits and non-starchy vegetables and weight change. Fruits and vegetables can easily be combined with yogurt and dairy milk alternatives by blending together in smoothies or using yogurt in dips and dressings.

HEART HEALTH

In a recent observational study, yogurt consumption was associated with healthy levels of systolic blood pressure and circulating glucose within the normal range, and may help maintain metabolic well-being, when consumed as part of a balanced diet.⁷

The FDA issued a qualified health claim stating that eating 43 g/d (1.5 oz/d) of specific nuts (almonds, hazelnuts, pecans, pistachios, walnuts, and peanuts) may reduce CHD risk.¹⁵ In addition, a systematic review and meta-analysis of controlled trials, which examined the Portfolio dietary pattern (a plant-based dietary pattern that combines recognized cholesterol-lowering foods), suggests that soymilk and other soy products may also support heart health.¹⁶ Combined plant proteins from the diet, including soy, have been associated with significant reductions in blood pressure. The same study found that legumes, including soy, have been associated with reductions in incident cardiovascular disease and coronary heart disease.¹⁶

Epidemiological data has shown that high intake of fruits and vegetables helps support heart health. In a systematic review of 95 prospective studies, inverse associations were observed between intake of apple/pears, citrus, green leafy vegetables/salads and cruciferous vegetables and cardiovascular disease and mortality.¹⁷

Overall, diets low in saturated fat and cholesterol, and as low as possible in trans-fat, may reduce the risk of heart disease.

CULTURES AND FERMENTATION

Cultures and fermentation can increase the nutrient content (e.g., B-vitamins) and digestibility of foods.¹⁸ Cultures (microorganisms) are used to make unique fermented products that can be associated with various health benefits. Cultures and fermentation in food are also important for food preservation and develop a unique taste and texture.

An example of a fermented food is yogurt—including plant-based yogurt alternative—that contains live and active cultures. Some other fermented foods include kefir, kombucha, kimchi, miso, tempeh, and sauerkraut.

Probiotics are 'live microorganisms which when administered in adequate amounts confer a health benefit on the host'.¹⁹ Prebiotics are substrates that are selectively utilized by host microorganisms conferring a health benefit.²⁰

Foods (including fermented foods) containing live bacteria, probiotics, or prebiotics can help nourish, enrich and protect the gut microbiota, which plays a central role in our overall health, both physical and mental (including digestive, metabolic, immune, cognitive functions, etc.). By contributing to the functioning of gut microbiota, these foods can help support digestive, immune, and metabolic health.

HEALTHY NUTRITION IN CHILDREN

The 2020-2025 Dietary Guidelines for Americans are the first to provide guidance by stage of life and illustrate the importance of introducing a healthy eating pattern early in life, as dietary patterns established in childhood tend to continue into adulthood.

BREAKFAST AND CHILDHOOD NUTRITION

A healthy eating pattern benefits a child's nutrition and health, and starting healthy habits early is crucial. Breakfast provides a key opportunity for establishing a healthy eating pattern in children. Individuals who eat breakfast on a daily basis consume more of the nutrients of public health concern, including calcium, vitamin D, potassium and fiber. A quality breakfast contains nutrient-dense foods, including whole grains, fruits, vegetables, and high-quality protein from sources like nonfat or low fat dairy, fortified soy alternatives, or lean protein.^{2,21}



YOGURT, DIET QUALITY, AND HEALTHY WEIGHT IN CHILDREN

Including nutrient-dense yogurt in a child's diet may help improve diet quality and prevent excess weight gain.

A recent analysis of national health and nutrition data found that introducing one 6-oz. serving of vitamin D-fortified yogurt each day to children's snack times would help children increase dietary intake of calcium, vitamin D, and potassium without adding empty calories.²² Combining yogurt with fruit or vegetables as a snack (for example, in a dip) can also increase dietary intake of fiber, another nutrient of concern in children.²¹ Another study recently found that higher yogurt consumption was associated with lower measures of adiposity in U.S. children (ages 8–18), such as lower BMI-for-age, lower waist circumference, and smaller subscapular skinfold.²³

VEGETARIAN DIETS FOR CHILDREN

Infants, children and adolescents may be at a higher risk for nutrient inadequacies—compared to adults—as calories and nutrient requirements are higher in relation to body weight during growth.²⁴ As such, there are some concerns about whether childhood dietary needs can be met on vegetarian and vegan diets. Tentatively, most studies reviewed did not show detrimental effect of vegetarian diets in children and did indicate beneficial outcomes compared to omnivore diets, such as favorable lipid profile, antioxidant status, or dietary fiber intake, and a tendency to help maintain a healthy body weight.²⁴ According to the American Academy of Pediatrics and the Academy of Nutrition and Dietetics, appropriately planned vegetarian and vegan diets can be healthful and nutritionally adequate for individuals during childhood and adolescence in case of medical indication or to meet specific dietary preferences.^{25,26}

MUSCLE AND BONE HEALTH

Calcium, vitamin D, and protein together help promote muscle and bone health. Calcium plays a major role in bone health and muscle contractility, and Vitamin D is required for calcium to be properly absorbed by the body.^{27,28} Protein plays a role in muscle maintenance and growth, and in bone health.²⁹

Most yogurts, if fortified with vitamin D, provide these nutrients, and research has linked consumption of dairy to improved bone health, especially in children and adolescents.²⁹ Dairy products are also well established as providing a source of complete protein.³⁰ Individuals who do not consume dairy can get these nutrients by choosing soy beverages, fortified with calcium and vitamin D, which are also a source of high-quality protein and support muscle and bone health.

LACTOSE INTOLERANCE

For those who are lactose intolerant, milk avoidance is a major obstacle for obtaining adequate calcium, vitamin D, and other vitamins.³¹ Yogurt is, for many consumers, a more easily digestible alternative to milk because, on average, it contains less lactose than milk.³² In addition, the yogurt's live and active cultures continue to have activity in the intestinal tract and may allow lactose intolerant individuals to enjoy dairy products with fewer associated symptoms.³³



The 2020 DGA include fortified soy beverage as a dairy milk alternative, but other plant-based beverages are not considered suitable substitutes in the dairy category.² Fortified soy beverage is low in saturated fat and most are fortified with calcium and vitamin D. Fortified soymilk is free from dairy and lactose making it a great option for lactose intolerant individuals.

FLEXITARIAN DIET - A FLEXIBLE APPROACH TO EATING

A flexitarian diet contains both plant-based foods (fruits, vegetables, legumes, grains, nuts and seeds) and animal-based products in a balanced approach. Switching to a flexitarian diet may help one manage certain health concerns and provide sustainable dietary options.³⁴

A recent study evaluating the eating habits of 1,800 adults found that a flexitarian eating pattern was associated with the highest gut microbiome alpha diversity when compared to the standard American diet.³⁵ While low-carb diets may be popular, they were found to have the greatest negative impact on the gut microbiome among those dietary patterns studied - influencing the lack of diversity of bacteria and a reduction of *Bifidobacteria*, a good bacteria in the gut.³⁵

Dairy—including lowfat and nonfat yogurt—plays a role in a flexitarian eating pattern. Not only is dairy a nutrient-rich food, it also has a lower carbon footprint than other animal-based proteins, such as beef and pork.³⁶ The high quality and highly digestible proteins in dairy products play a key role in nutrition, especially when reducing meat consumption.³⁷ Fortified plant-based products such as soy beverages and yogurt alternatives typically have lower carbon footprints and can be a good complement to dairy foods as part of a flexitarian eating pattern.^{36,38}

Incorporating a combination of dairy and plant-based foods into a healthy flexitarian eating pattern—one that includes a variety of nutrient-dense foods—can help encourage a balanced diet, healthy lifestyle and a more diverse gut microbiome, and may also offer benefits to the planet.



Brought to you by



DANONE
NORTH AMERICA

©2022 Danone US, LLC.

Certified



Corporation

OUR MISSION:

To bring health through food to as many people as possible.

References:

1. Krebs-Smith SM, Guenther PM, Subar AF, Kirkpatrick SI, Dodd KW. Americans do not meet federal dietary recommendations. *J Nutr*. 2010;140:1832-38.
2. U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary Guidelines for Americans, 2020-2025. 9th Edition. December 2020. Available at [DietaryGuidelines.gov](https://www.dietaryguidelines.gov).
3. Dietary Guidelines Advisory Committee. 2020. Scientific Report of the 2020 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Agriculture and the Secretary of Health and Human Services. U.S. Department of Agriculture, Agricultural Research Service, Washington, DC.
4. Lloyd-Jones DM et al. American Heart Association Strategic Planning Task Force and Statistics Committee. Defining and setting national goals for cardiovascular health promotion and disease reduction: the American Heart Association's strategic impact goal through 2020 and beyond. *Circulation*. 2010;121:586-613.
5. Hess J, Rao G, Slavin J. The Nutrient Density of Snacks: A Comparison of Nutrient Profiles of Popular Snack Foods Using the Nutrient Rich Foods Index. Poster presented at: Experimental Biology, April 2016; San Diego, CA.
6. Westerterp-Plantinga MS, Lemmens SG, Westerterp KR. Dietary protein—its role in satiety, energetics, weight loss and health. *Br J Nutr*. 2012;108 Suppl 2:S105-S112.
7. Wang H, Livingston K, Fox CS, Meigs JB, Jacques PF. Yogurt consumption is associated with better diet quality and metabolic profile in American men and women. *Nutr Res*. 2013;33:18-26.
8. Messina M. Soy and Health Update: Evaluation of the Clinical and Epidemiologic Literature. *Nutrients*. 2016;8(12):754.
9. Mozaffarian D, Hao T, Rimm EB, Willett WC, Hu FB. Changes in diet and lifestyle and long-term weight gain in women and men. *N Engl J Med*. 2011;364:2392-2404.
10. Neacsu M, Fyfe C, Horgan G, Johnstone M. Appetite control and biomarkers of satiety with vegetarian (soy) and meat-based high-protein diets for weight loss in obese men: a randomized crossover trial. *Am J Clin Nutr*. 2014;100:548-58.
11. Speaker KJ et al. Effects of consuming a high-protein diet with or without soy protein during weight loss and maintenance: a non-inferiority, randomized clinical efficacy trial. *Obes Sci Pract*. 2018;4(4):357-366.
12. He K et al. Changes in intake of fruits and vegetables in relation to risk of obesity and weight gain among middle-aged women. *Int J Obes Relat Metab Disord*. 2004;28(12):1569-1574.
13. The Nutrition Source. Harvard T.H. Chan. The School of Public Health. (20 Aug 2018). Vegetables and Fruits. [online] Available at: www.hsph.harvard.edu/nutritionsource/what-should-you-eat/vegetables-and-fruits/ [Accessed 18 Sept. 2018].
14. Bertola ML et al. Changes in intake of fruits and vegetables and weight change in United States men and women followed for up to 24 years: analysis from three prospective cohort studies. *PLoS Med*. 2015;12(9):e1001878. [online] Available at: <https://doi.org/10.1371/journal.pmed.1001878> [Accessed 18 Sept. 2018].
15. US Food and Drug Administration. Qualified health claims: letter of enforcement discretion: nuts and coronary heart disease. Rockville, MD: US Food and Drug Administration, 2003.
16. Chiva-Blanch L et al. Portfolio dietary pattern and cardiovascular disease: a systematic review and meta-analysis of controlled trials. *Prog Cardiovasc Dis*. 2018;61(1):43-53.
17. Aune D et al. Fruit and vegetable intake and the risk of cardiovascular disease, total cancer and all-cause mortality—a systematic review and dose-response meta-analysis of prospective studies. *Int J Epidemiol*. 2017;46(3):1029-1056.
18. Patel A, Nihir S, Prajapati JB. Biosynthesis of vitamins and enzymes in fermented foods by lactic acid bacteria and related genera—A promising approach. *Croat J Food Sci Technol*. 2013;5(2):85-91.
19. World Health Organization, Food and Agriculture Organization of the United Nations. (2006). Probiotics in food: health and nutritional properties and guidelines for evaluation. FAO food and nutrition paper 85. [online] Available at: <http://www.fao.org/tempref/docrep/faq/009/a0512e/a0512e00.pdf> [Accessed 19 June 2019].
20. Gibson G et al. Expert consensus document: The International Scientific Association for Probiotics and Prebiotics (ISAPP) consensus statement on the definition and scope of prebiotics. *Nat Rev Gastroenterol Hepatol*. 2017;14(8):491-502.
21. O'Neil CE et al. The role of breakfast in health: definition and criteria for a quality breakfast. *J Acad Nutr Diet*. 2014;114(12):s8-s26.
22. Hess J, Slavin J. Snacking for a cause: nutritional insufficiencies and excesses of U.S. children, a critical review of food consumption patterns and macronutrient and micronutrient intake of U.S. children. *Nutrients*. 2014;6(11):4750-4759.
23. Keast DR, Hill Gallant KM, Albertson AM, Guggen CK, Holschuh NM. Associations between yogurt, dairy, calcium, and vitamin D intake and obesity among U.S. children aged 8-18 years: NHANES, 2005-2008. *Nutrients*. 2015;7(3):1577-1593.
24. Schürmann S, Kersting M, Alexy U. Vegetarian diets in children: a systematic review. *Eur J Nutr*. 2017;56(5):1797-1817.
25. Kleinman RE, Greer TR. Pediatric Nutrition. American Academy of Pediatrics. 2013.
26. Academy of Nutrition and Dietetics (AND). Position of the Academy of Nutrition and Dietetics: vegetarian diets. *J Acad Nutr Diet*. 2016;116(12):1970-1980.
27. Gropper SAS, Smith JL. *Advanced Nutrition and Human Metabolism*. Belmont, CA: Wadsworth Cengage Learning. 2013.
28. Institute of Medicine. Dietary reference intakes for calcium and vitamin D. Washington DC: National Academies Press. 2011.
29. Rizzoli R. Dairy products, yogurts, and bone health. *Am J Clin Nutr*. 2014;99(5):1256S-1262S.
30. Mitchell CJ et al. Understanding the sensitivity of muscle protein synthesis to dairy protein in middle-aged men. *Int Dairy J*. 2016;63:35-41.
31. Savaiano DA, Boushey CJ, McCabe GP. Lactose intolerance symptoms assessed by meta-analysis: a grain of truth that leads to exaggeration. *J Nutr*. 2006;136:1107-1113.
32. Webb D, Donovan SM, Meydani SN. The role of yogurt in improving the quality of the American diet and meeting dietary guidelines. *Nutr Rev*. 2014;72(3):180-189.
33. Lomer MC, Parkes GC, Sanderson JD. Review article: lactose intolerance in clinical practice—myths and realities. *Aliment Pharmacol Ther*. 2008;27:93-103.
34. Intergovernmental Panel on Climate Change. (2019). Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terrestrial Ecosystems. [online] Available at: <https://www.ipcc.ch/report/srcc/> [Accessed 3 Oct. 2019].
35. Cotillard A et al. A posteriori dietary patterns better explain variations of the gut microbiome than individual markers in the American Gut Project. *Am J Clin Nutr*. 2022;115(2):432-433.
36. Eshel G, Shepon A, Makov T, Milo R. Environmental costs of animal-based categories. Proceedings of the National Academy of Sciences of the United States of America. 2014;111(33):11996-12001. [online] Available at: <https://www.pnas.org/content/111/33/11996> [Accessed 21 April 2020].
37. FAO. (2013). Dietary protein quality evaluation in human nutrition. [online] Available at: <http://www.fao.org/ag/humannutrition/35978-02317b979a686a57aa4593304f6c17f06.pdf> [Accessed 2 May 2019].
38. Project Drawdown. (2020). Climate Solutions for a New Decade. Plant-rich diets. [online] Available at: <https://www.drawdown.org/solutions/plant-rich-diets> [Accessed April 09, 2021].