

used disproportionately to raise plants as feed in beef production. Vegetarians conserve water by choosing plants without wasting nutrients and calories in beef production.

The environmental cost of food production is discussed and studied. The toll on the environment of home-prepared, semi-prepared, and ready-to-eat meals has been compared in Sweden. The meal studied consisted of meatballs, potatoes, carrots, bread, and milk.

Agriculture amassed the biggest environmental impact, accounting for 30% of the impact related to energy and 95% of the impact related to eutrophication, that is the increase in nitrogen or phosphorus in an ecosystem, the lack of oxygen and decrease in water quality. Differences in the three meals were small in spite of popular opinion which perceives industrially-prepared meals as taking a major toll on the environment through packaging, transport, and energy use in food production.

Summary

Decades of research have gone into the three tools that the US government provides for meal planning. Choosing foods in the number and size of servings recommended for your Calorie level will provide the nutrition that meets your nutrient needs. Foods will meet those needs. Follow the guidelines for appropriate food choices. Read the food label for the appropriate serving size. Vegetarian diets tend to use fewer resources with less impact on the environment.

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Food-Based Meal Planning

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Considerable decision making on the part of people around the globe focuses on what to eat. Some worry about finding enough food for the day. Others worry about the “right” foods. Others *should be* worrying about “too much” food; i.e., those who are overweight or obese. Discussing meal planning is a topic of concern to a broad spectrum of the country.

Diet surveys

Diet surveys show that all believe that body weight, diet, and physical activity influence health. Yet further surveys suggest that food habits are not commensurate with knowledge and beliefs. A stroll down Maintain Street, USA reveals the same.

Half of Americans describe their diet as healthful, but only 14% eat five or more servings of fruits and vegetables each day. One third classify themselves as sedentary and do not engage in physical activity. Half say that they are making dietary changes to improve their health, yet *two-thirds* of Americans are overweight or obese.

The Shopping for Health Study in 2004 found six in ten try hard to eat healthfully, so that they can avoid health problems later in life. More than half of food shoppers strongly agree that eating healthfully is a better way to manage illness than with medication. What then are the “how to’s” of eating healthfully?



Meal management goals

The traditional goals of meal management are five in number from those who study the topic. The meal manager intends to: 1) meet nutrient needs of the population served, from infancy to the aged in health or disease states, 2) provide satisfying meals, 3) conserve time and energy, 4) stay within the budget, 5) ensure food safety

Food choices

Why do we eat what we do? Of those surveyed, 87% say they are very or somewhat concerned about nutrition, yet widespread dietary improvement

is not seen. Nutrition knowledge or concern is out-manuevered by *many* other factors. Chief among them are taste, convenience, and cost.

Yet, eating practices are dynamic and influenced by other powerful factors, such as, food preferences, weight concerns, physiology, lifestyle, time challenges, economics, environment, attitudes and beliefs, social or cultural influences, media, food technology, and food product safety.

Three tools for meal planning

The US Department of Agriculture and the US Department of Health and Human Services have provided three tools for meal planning that will provide balanced, sound nutrition for the public. Attention must be given to all three, since they provide information helpful in the use of the other two. The three are *MyPyramid*, the *Dietary Guidelines for Americans*, and the *Food Label*.

The pyramid divides foods into groups based on nutrients common to all foods in the group. The Bread/Cereal/Grain group provides carbohydrate, fiber, protein, B vitamins, and iron to the meal plan. The Fruit group provides vitamins A and C, as does the Vegetable group, along with carbohydrate, minerals, and fiber. The Dairy group provides protein, calcium, vitamins D, riboflavin, and B₁₂. The Protein group foods are the source of protein, iron, and zinc.

For those who skip whole groups of foods, the result often is diets missing those nutrients. If the choice is to eliminate dairy, for example, it is best to read the label of the food chosen to replace it. Look for 20% to 30% of the DV of calcium on the food label, the same for vitamin D and B₁₂.

How to use the pyramid may be found on the Internet at www.MyPyramid.gov. Enter your age, gender, height, weight, and activity level. Your calorie needs will show and the number of servings of each group to reach that calorie level. The General Conference Nutrition Council's vegetarian version of the USDA pyramid may be found at www.llu.edu/llu/nutrition/vegfoodpyramid.pdf.

The *Dietary Guidelines for Americans* can be found at www.MyPyramid.gov. The *Guidelines* tell us that the foods we choose would best be low in sugar, fat, and salt among other things. Those recommendations sound so like Ellen G. White, as she wrote over 100 years ago. Note the following 1863 onward concepts quoted in *Councils on Diets and Food* (CDF) compared to excerpts from the *Dietary Guidelines for Americans*.

In 1890, Ellen G. White (EGW): "Fruits, grains, and vegetables, prepared in a simple way, free from spice and grease of all kinds, make with milk or cream, the most healthful diet." CDF 92

In 2005, US Dept of Agriculture & US Dept of Health and Human Services (USDA/USDHHS): "Choose fiber-rich fruits, vegetables, and whole grains often..."

In 1905, EGW: "The oil, as eaten in the olive, is far preferable to animal oil or fat."

In 2005, USDA/USDHHS: "Limit the intake of fats and oils

high in saturated and/or *trans* fats..."

White wrote her recommendation before the vocabulary of nutrition scientists had framed the words "saturated" fat or "*trans*" fat.

1905, EGW: "Far too much sugar is ordinarily used in food." CDF 333

In 2005, USDA/USDHHS: "Choose and prepare foods and beverages with little added sugars.

In 1905, EGW: "Do not eat largely of salt...use some salt, (it) is actually essential for the blood." CDF 344

In 2005: USDA/USDHHS: "Choose and prepare foods with little salt."

In 1905, EGW: "In relation to tea, coffee, tobacco, and alcoholic drinks, the only safe course is to touch not, taste not, handle not."

In 2005, USDA/USDHHS: "Pregnant and lactating women should not consume alcohol, neither should those who cannot restrict their intake of alcohol, nor those on medications that interact with alcohol, or those with specific medical conditions."

In 2001, American Heart Assoc: "...there is little current justification to recommend alcohol (wine specifically) as a cardioprotective strategy." *Circ.* 2001;103:472.

Perhaps the next revision of the *Guidelines* will voice the collected wisdom of the 1995 writers of the document, in which they wished to state clearly to avoid alcohol. Knowing the goal would never be reached by the public, they instead wrote "use alcohol in moderation."

The food label completes the triad of tools for meal planning. The label tells the serving size of packaged foods and nutrient value of food. Specifically, Calories per serving are right at the top of the label after the serving size and number of servings in the container.

The grams of the types of fat and total fat are given, milligrams of cholesterol, grams of sodium and carbohydrate, grams of protein are followed by two vitamins (A and C) and two minerals (calcium and iron). The percent of the recommended daily value of each is based on a 2000-Calorie diet. Read more about the food label at www.health.gov/dietaryguidelines.

Economy

Water cost is significant for food production. Agriculture scientists place the cost at 1000 liters of water to produce 1 kg of cereal grain as compared to 43,000 liters to produce 1 kg of beef. Or, 14 L/gm of cereal protein, and 175 L/gm beef protein are needed. Clearly, efficient water use supports a vegetarian diet as compared to diets with beef.

Beyond water cost are the additional fossil fuel costs of pumping water for irrigation and the implementation costs of irrigation systems. Such systems are