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DIETARY ALTERNATIVES



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Since the beginning of mankind, food has been at the center of human activities. As a result, our food is a very personal item. Food choices are influenced by many social, economic, cultural, and psychological factors as well as nutritional ones.

Humanitarian considerations may also motivate some food choices. We are being asked to share with the world's less fortunate. Some people are suggesting that we alter our eating habits to make more food available worldwide. We've been asked both to eat less and to rely more on grain and less on meat as a dietary staple.

Is this a viable alternative? Would changing our diets help feed the world? What effects would such changes have on our nutritional well-being?

Our Diets and Theirs — A Comparison

People in developed nations are getting about 1,000 more calories a day than those in less developed countries (Fig. 1). Even though this calorie difference is important, it doesn't tell the whole story. The foods those calories are coming from also make a difference.

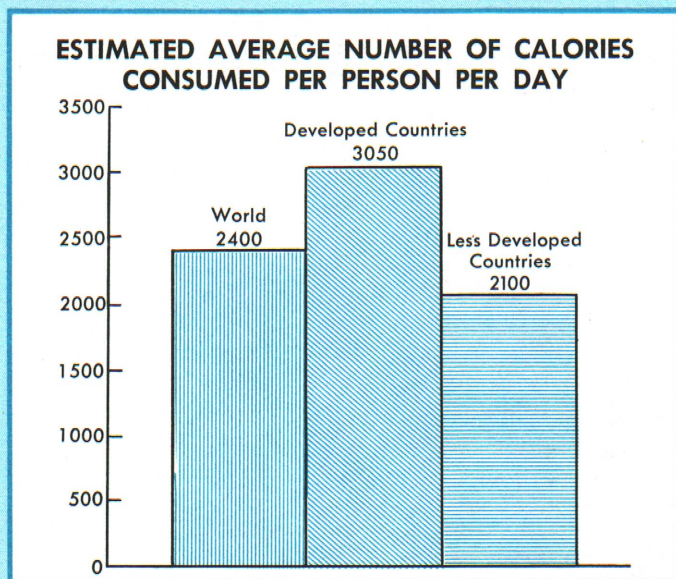


Figure 1

In developed nations, foods of animal origin, such as meat, milk, and eggs, are relatively abundant (Fig. 2). And these foods supply important amounts of high-quality protein as well as many essential vitamins and minerals. In contrast, less developed nations depend more upon cereal grains as staples; foods from animal sources are scarce. Although cereal grains do supply protein, it is lower in quality and quantity than that of animal proteins. When dependence on grain is coupled with a shortage of calories, protein-calorie malnutrition (PCM) often results — particularly for the pregnant, the infant, and the young child.

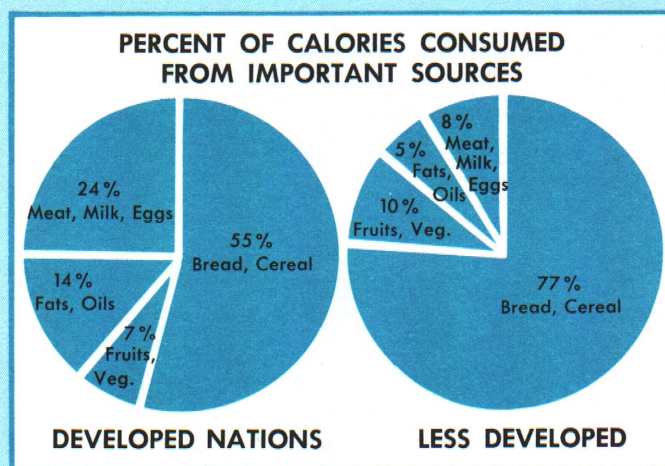


Figure 2

Many youngsters of the Third World are victims of protein-calorie malnutrition (PCM). Scientists have shown that severe protein-calorie malnutrition early in life limits mental development. This in turn limits the potential of education to help solve the problems of the Third World. A nation's food does affect its destiny in multiple ways.

How We Use Grain

We produce about 2,200 pounds of grain per person per year in the United States. Well over half is fed to

ESTIMATED AVERAGE ANNUAL PER CAPITA PRODUCTION & USE OF CEREAL GRAINS

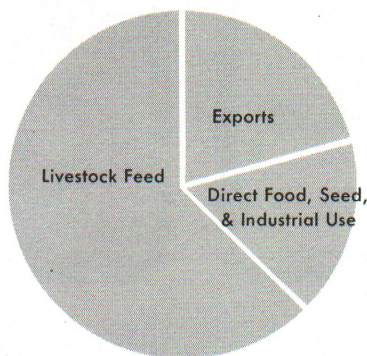


Figure 3

livestock; less than 15 percent is actually consumed as human food in this country (Fig. 3).

In contrast, Third World countries produce only 400 to 450 pounds of grain per person yearly and most is eaten as human food. Four hundred fifty pounds will almost meet a person's minimum calorie needs for a year but leaves nothing to be saved for an emergency. And emergencies come often in the less developed nations.

Some suggest we should feed grain to people instead of to livestock. They reason that if Americans cut down on meat consumption and eat cereals instead, more grain can be made available for direct human consumption. However, as shown in Figure 4, we have been doing the exact opposite. We are depending less and less on grain and more on meat as a calorie source.

PER CAPITA FOOD CONSUMPTION, U.S., 1910-1970 (3-YEAR MOVING AVERAGE: 1967 = 100)

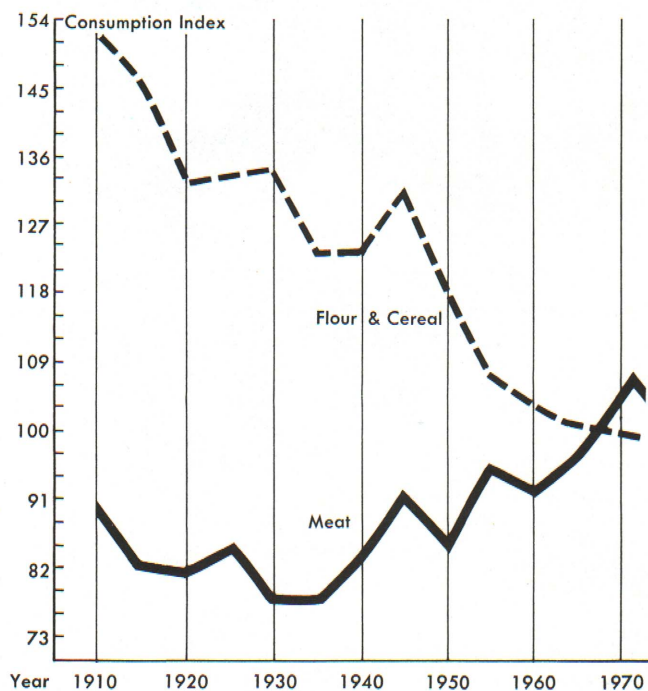


Figure 4

In contemplating a major shift from meat to cereals in our diet, we must consider the consequences. We need to take into account three things: first, the most efficient utilization of our own food-producing resources; secondly, our potential to feed additional persons; and finally, the long-term domestic nutritional effects of such a diet shift.

Use of Food-Producing Resources

Is it a sin to feed grain to livestock when people are starving? It is true that in the past livestock have been "fattened up" for slaughter and our taste buds have been conditioned to want juicy, tender steaks and chops. But a trend to leaner meat was started a few decades ago, for economic as well as for health reasons.

Grain producers can either market their product directly as grain or market it indirectly by first feeding it to livestock that are eventually sent to market. Price of grain in relation to the price of livestock largely determines which method is chosen. Recent relatively high prices for grain have led to more direct marketing. Less grain has been fed and steers have been sold at lighter weights. Such trends have led to "grass-fed" and "baby" beef in supermarkets.



Human beings and animals are not necessarily competing for food. It depends upon the species of animal as well as the foodstuff in question. Ruminants — four-stomached animals such as cattle, sheep, and goats — have a unique digestive system enabling them to use fibrous foods that we cannot. Microorganisms living in the rumen, largest of the four stomachs, can break down fibrous material and release volatile fatty acids which are used by the ruminant as a source of energy. As these bacteria break down the fibrous material, they grow and multiply; eventually they are digested by the ruminant and used as a source of energy and protein. Thus, these four-stomached animals can utilize fibrous plant material and by-products from the food industry that humans cannot use, and can convert these materials into high-quality foods such as meat and milk. Figure 5 illustrates the role ruminant animals can play in producing food for humans.

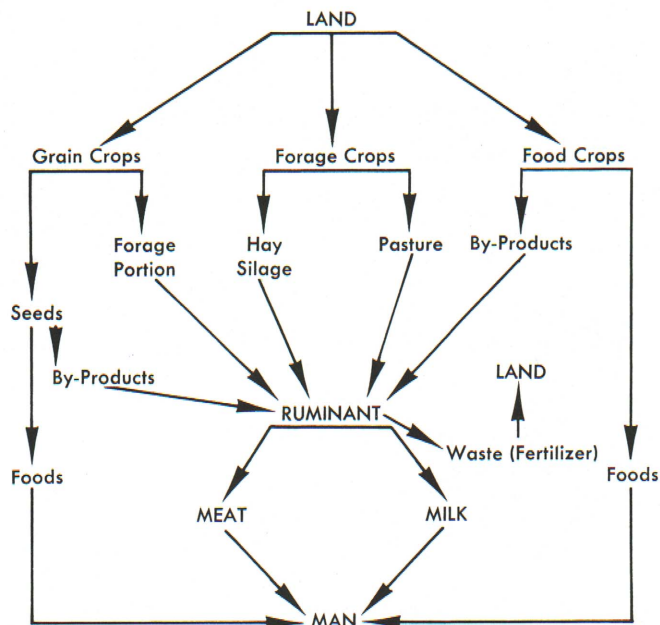


Figure 5

Much of the marginal land unfit for intensive row-crop agriculture produces human food because of the grazing ruminant animal. Also, plant refuse left over from other farming operations, such as cornstalks and beet pulp, can be converted to human food. The ruminant animal can play a unique role in helping solve world food problems. Maybe less grain could be marketed through livestock. But would eliminating ruminants be in our best interests or in the interests of the less developed nations?

How Many Can Be Fed?

Currently, if all grain produced in this country were used as human food, 800 million to 1 billion people could be supported at minimum calorie levels. World population is at present just over 4 billion and is pro-



jected to be 6.5 billion by the year 2000. Obviously we cannot feed the entire world as has been suggested. Increasing grain production by 50 percent would still fall far short. However, with major consumption shifts, substantial amounts of grain could be made available to those who need it most.

Even if more grain could be freed for human consumption, two problems remain. How can grain be delivered to those who need it most? Marketing systems are almost nonexistent in some less developed countries. Roads and means of transportation must be developed to distribute grain. Who will pay for the grain and its distribution? Will the U.S. taxpayer? Can Third World countries? Can a suitable method of exchange be developed?

The Nutritional Consequences

Eating a bit less, eating leaner meat, and eating less meat and more grains can affect nutritional well-being in many ways — some positive, some negative.

The benefits

Some moderate dietary changes could benefit many people. Obviously, diets lower in calories would help fight the "battle of the bulge." Obesity is our number one nutrition problem. Over one-third of adult Americans, as well as an alarming number of our youngsters, are overweight. As shown in Table 1, our calorie intake has remained about the same over the years. But we aren't as active as we used to be; we live in a push-button society and let our fingers do the walking instead of our legs. And we pay the consequences.

Table 1. — Daily Calories Used by Americans

Year	Calories (Kcal)
1909.....	3530
1919.....	3440
1929.....	3460
1939.....	3340
1949.....	3200
1959.....	3170
1968.....	3250

In addition to creating the obvious problems, extra pounds are a complicating factor in such serious diseases as diabetes and heart disease. Relying a bit more on cereal grains and less on meat would mean diets lower in fat and this would be a step in the right direction. Fats and oils are over twice as high in calories as either carbohydrates or protein. But animal fats aren't the only factor contributing extra calories. High-calorie, low-nutrition snacks and grossly overindulgent eating habits must take their share of the blame too. So eating a little less could be good medicine for us as well as making a bit more food available to the hungry.

Overconsumption of saturated fats and cholesterol has been linked to heart disease in some individuals. The nature of the relationship is unclear. Individual differences do exist. A diet containing substantial cholesterol and saturated fats may cause little or no problems for one person but present real risks for

another. So eating leaner meat, a bit less meat, and more cereal foods might help individuals in the "risk" category.

Many Americans have a love affair with protein; most eat more protein than their bodies actually need. As a matter of fact, some are consuming over twice as much protein as they need. To many, a serving of meat is 8 to 10 ounces of steak — not the 2 to 3 ounces of cooked lean portion recommended by nutritionists. And we need only two servings of meat (or meat alternate) each day. Table 2 shows serving sizes of meat and other protein foods.

Table 2. — Meat Group Foods

Food	Amount per serving
Meat, poultry, or fish	2 to 3 oz. cooked lean
Eggs	2
Cooked dry beans or peas	1 cup
Peanut butter	4 tablespoons

Extra protein is used for energy and is, at best, an expensive calorie source. And too much protein sometimes proves harmful, particularly to persons with kidney ailments and gout. Can we justify our high protein intake in a world where 300 million youngsters suffer from protein-calorie malnutrition?

Over the years American diets have included less and less indigestible plant fiber. Some fiber or roughage is needed for normal functioning of the digestive tract. And some researchers suggest that such diseases as diverticulosis, appendicitis, and colon cancer may be caused by a lack of dietary fiber. Although positive proof is still lacking, many of us would do well to eat more roughage. Including more whole-grain cereal foods in the diet would certainly increase fiber intake.

The risks

But there's a second side to every coin. And a sharp shift from animal-source foods to grains raises some potential problems, too. For limiting our intake of these foods may do more than cut protein intake. Animal-source foods supply many essential nutrients in addition to protein. As an example, meat is a chief iron

source. And vitamin B₁₂ is found only in foods of animal origin; plant foods are devoid of it. Nutritionists can formulate diets that are low in animal foods but are adequate in iron and vitamin B₁₂, but will people follow nutritionists' advice?

Another consideration is that plant proteins are more efficiently used when eaten with animal proteins. Animal proteins contain abundant amounts of essential amino acids that are low in plant proteins. Although you can achieve an adequate intake and balance by mixing certain plant proteins, you can achieve the same goal much easier by eating animal and plant protein foods together. We should remember that the poor in underdeveloped nations are not strict vegetarians. Some source of animal protein is usually combined with plant foods.

There is one final nutritional consideration. The more varied your diet, the greater your chance of getting all the essential nutrients. In other words, there's safety in numbers. Cutting down or eliminating a group of foods from your diet makes it more difficult to get adequate nutrition. As diets become more vegetarian in nature, increasingly wise food choices must be made.

In Conclusion

Will Americans make the wise choices necessary to have an adequate diet if animal-source foods become limited? Will consumers — both here and abroad — accept proposed changes in foods available and use them properly? Answers to these questions are difficult. Food habits cannot be changed overnight. Major dietary changes require years and changes probably won't happen to the degree suggested by some. However, weighing all the nutritional pros and cons suggests that many Americans might benefit from eating a diet with a bit less meat, leaner meat, and more whole-grain products.

But we must remember that our national policy must take into account more than just nutritional considerations. What path we take will also be decided upon humanitarian, political, and economic grounds. Sound policy will result only if all areas are given due consideration.

This leaflet and two others — "Issues in the Marketplace" and "Choices in the Marketplace" — were prepared to supplement a series of six leaflets on "Your Food," which were published in 1976 as part of an educational program guided by a National Steering Committee. The three supplementary leaflets were prepared and published independently of the original project.