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CAN WE FEED A HUNGRY WORLD?

A STUDY GUIDE by Marshall A. Martin
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Audience and Content

This slide/cassette tape program is designed for use in the classroom at the high school and university level and by various extension audiences including farmers, consumers, civic groups, church groups, and government officials. The program, which lasts about 12 1/2 minutes, covers three basic topics: a) world population growth, b) current world food supplies, and c) prospects for expanding food production in the developed and lesser-developed nations.

Format for Use

The program is best used as a means of providing an audience with background on the world food problem. After viewing the educational material, several alternative formats for discussion would be appropriate including: a) a panel of experts, b) an extension specialist who serves as a discussion leader, c) assignment of questions for students to investigate, or d) small group discussion. A set of discussion questions and a selective list of references are included in this packet of materials.

Technical Considerations:

The slide/cassette program is designed for use on a Kodak Carousel projector and a Wallensack sync-sound cassette tape recorder. There are 80 slides in the set. To begin, place the first slide, a blank, in the projector. Silent beepers on the cassette tape will trigger the other 79 slides at the appropriate time to coincide with the narrator's remarks. A copy of the script and a brief description of each slide are included in this packet of materials.

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A Study Guide

The subject covered in the slide/cassette program is rather complex and requires the integration of information from various disciplines. The following list of true/false questions and suggested answers reviews the basic material covered in the slide/cassette program. Moreover, as the questions are discussed and analyzed, it is hoped that people will be able to broaden their understanding of the world hunger problem and perhaps find appropriate ways for them to become involved in finding solutions to the problems of undernourishment both in the U.S. and in other countries.

1. FAMINE IS NOW THE WORST IN THE HISTORY OF THE WORLD.

   True_______ False_______

   Malnutrition is widespread around the world, and there are some cases of famine. The Food and Agriculture Organization estimates about 450 million people, or about 10 percent of the world's population, are malnourished. However, in terms of famine, conditions are now mild compared to famines down through history. Catastrophic famines in several countries in past centuries wiped out 10 to as much as 50 percent of the country's population. Although, historically, the current severity of undernourishment is mild, there is still a large number of the world's population which does not consume an adequate diet.

2. MALNUTRITION IS A WORLD-WIDE PROBLEM.

   True_______ False_______

   Malnutrition is largely the result of poverty and partly the result of a lack of education. Poverty and illiteracy are world-wide problems. Hence, malnutrition is a world-wide problem.

   Twenty percent or more of the population in the lesser developed nations in Africa, Asia, and Latin America suffer from varying degrees of malnutrition. Three percent or less of the population in more developed nations face problems of undernourishment.

   Children are often the primary victims of inadequate diets. Perhaps half the children in the low-income countries suffer from inadequate nutrition.

   Nation-wide poverty is largely the result of low productivity. The key to better incomes and improved nutrition is investment in education, health care, research, and physical capital which will increase productivity in the farm and nonfarm sectors of the economy.

3. THE WORLD POPULATION IS GROWING FASTER THAN THE WORLD FOOD SUPPLY.

   True_______ False_______

   Food output has been increasing at a rate of 2.5 to 3.0 percent annually since World War II while the world's population has been growing at a rate of approximately 2.0 percent per year. Hence, on the average the world food supplies have been growing faster than the
world's population.

On a per capita basis food production has grown much faster in the developed countries where population growth is 1.0 percent or less per year but food production is growing at an annual rate of 2.5 to 3.0 percent. While agricultural output is growing at the same rate in the developing as in the developed economies, the population is growing at approximately the same rate as food output in many developing countries. Hence, in some developing countries per capita food supplies often grow one-half percent or less per year. And when there is a sudden short-fall in agricultural production because of inclement weather, for example, acute food shortages can occur in that country or region of the world.

4. ABOUT 8 OUT OF EVERY 10 BABIES ARE BORN IN THE LESS DEVELOPED COUNTRIES.

True_______ False_______

About 80 percent of the increase in the world's population is occurring in the less developed nations. The countries of Asia, Africa, and Latin America contain about 75 percent of the world's population. Only about 5 percent lives in the United States.


True_______ False_______

While a population of 8 billion was being projected by demographers as recently as 10 years ago, it now appears that the world's population in the year 2000 will be closer to 6 billion. Birth rates have begun to decrease in most countries of the world.

However, our current world population growth rate of 2.0 percent per year and the addition of almost 2 billion people in the next twenty years is still an awesome increase in the world's population. It took from the beginning of time to 1830 to reach one billion people in the world. It only took 100 years to add the second billion. During the next 45 years the population doubled again reaching 4 billion in 1975.

A population growth of this magnitude will put increased pressures on the available natural resources. It will tax the ingenuity of mankind to find ways to produce and distribute the food and other goods and services required to provide an acceptable standard of living for a population of 6 billion or more.

6. PROVIDING BIRTH CONTROL DEVICES TO CONTROL POPULATION GROWTH IS THE ONLY SOLUTION TO THE WORLD FOOD PROBLEM.

True_______ False_______

While birth control information can help reduce the rate of growth of the world's population, educational levels, cultural factors, and socio-economic conditions also play an important role in people's decisions to change life style and reduce family size. In the long-run, however, a reduction in population growth is essential if the world food problem is to be eventually solved.
7. THE U.S. AND OTHER DEVELOPED COUNTRIES ARE NOW LARGELY RESPONSIBLE FOR FEEDING THE WORLD.

True_______ False_______

Cereal grain production in the U.S. represents 20 percent of total world cereal grain production. The U.S. consumes about 12 percent of total world grain consumption. Currently U.S. cereal grain exports represent about 50 percent of grain traded in the international market. U.S. agricultural exports have increased about five-fold in value and about 2.5 times in volume in the past decade.

Since World War II the U.S. has provided about 80 percent of all food aid assistance provided by the various donor nations. But the U.S. is less generous relative to other nations when U.S. food and development aid is compared to our Gross National Product. At least eleven other nations give a larger share of their Gross National Product as food and development assistance to low-income countries.

The U.S. can and has played a critical role in assisting low-income countries improve their diets and standard of living. Other nations have also been generous.

8. SELF-SUFFICIENCY SHOULD BE THE GOAL OF ALL DEVELOPING COUNTRIES.

True_______ False_______

This is a very controversial issue. From the viewpoint of national security in a time of war or other catastrophic economic or political events, no nation wishes to be overly dependent upon another nation for its basic food supply. Yet from an economic perspective each country should produce those goods or services in which it has a comparative advantage. The availability of natural resources, existing transportation systems, educational and skill levels of the population, and geographic location all influence the types of products a particular country or region can most efficiently produce.

In general producers and consumers are better off if each country produces those goods in which it has a comparative advantage and imports those goods in which another country has a comparative advantage. A reduction in barriers to trade and increased world trade rather than protectionist policies and complete self-sufficiency in food in the long-run will enhance the well-being of the developed and developing nations. The political implications of excessive reliance on other nations for food must not be overlooked, however.

9. ALMOST ALL COUNTRIES HAVE POLICIES WHICH ENCOURAGE FARMERS TO INCREASE FOOD PRODUCTION.

True_______ False_______

Strangely enough, many do not. Many countries follow a cheap food policy which tends to discourage food production.

In some countries food price ceilings are set by the government to reduce consumer prices. In other countries the currency is overvalued to reduce food exports and make more food available domestically at lower prices. In still other cases, export embargoes, taxes, and quotas discourage food exports.
These and other cheap food policies while lowering retail food prices in the short-run also lower farm product prices and discourage farmers from expanding agricultural production. If farm prices were higher, farmers could afford to make larger investments in machinery, fertilizer, seed and irrigation facilities to increase food production in the long-run. Also since farmers make up half or more of the population in many less developed countries, an improvement in farm incomes would help reduce some of the sectoral and regional inequalities in income distribution.

10. **THE DEMAND FOR CEREAL GRAINS IS LIKELY TO BE GREATER THAN THAT FOR LIVESTOCK PRODUCTS IN THE FUTURE.**

True_______ False_______

Over half the world's population lives in countries with per capita incomes less than $550 per year. Although they might want to eat more livestock products, they often cannot afford as much meat, eggs, and dairy products in their diets as they would like. Hence, food grains, especially rice and wheat, are likely to continue to play a prominent role in the diet of millions of people.

As people's income increase, they will spend an increasingly larger proportion on livestock products and relatively less on food grains for direct consumption. As the demand for animal proteins expands, there will be an expansion in the demand for cereal grains and oil seeds. Corn and soybeans are especially important in the feeding of livestock.

Given these two sources of demand for cereal grains, the demand for cereal grains is expected to continue strong in the years ahead. But the demand for animal protein is expected to grow as well, especially in the semi-industrialized countries where rapid economic development is occurring.

11. **IF AMERICANS ATE A LITTLE LESS BEEF PER WEEK, THAT WOULD FREE UP SOME OF THE GRAIN USED TO FEED BEEF ANIMALS, AND MORE GRAIN WOULD BE AVAILABLE TO HELP THE HUNGRY.**

True_______ False_______

This is an over-simplified solution to the hunger problem. First, the grains in cattle feed largely consist of corn, barley, and grain sorghum. People in general do not eat much of these grains directly. Second, and more importantly, cattle consume grass, forages, and other crop residues which otherwise would go to waste. Ruminants—cattle, sheep, and goats—have provided an important part of man's food supply for centuries. About 70 percent of the world's beef supply comes from forages that would otherwise be wasted. These forages are often grown on land that is not suitable for crop production. Third, even if the grain were saved, other countries would have to be able to buy it or the U.S. would have to give it to them. Other countries may not be able to buy it, and the U.S. might not be willing to give it to them.

Eating less beef may be prudent to help consumers reduce their food bill or solve certain personal health problems, but it is not a very viable solution to the total world hunger problem.
12. LARGE FOOD AID DONATIONS CAN BE DETRIMENTAL RATHER THAN BENEFICIAL IN SOME LOW INCOME COUNTRIES.

True______ False______

Through Public Law 480, passed in 1954, the U.S. has provided more than 80 percent of all the world's food aid. In some countries, the large volume of food imports flooded the local grain markets and tended to depress farm prices. Consequently, local farmers received less for their crops and shifted into other economic activities. Hence, while the food aid did help some people improve their diets, it also discouraged production by local farmers.

The volume of food aid must be carefully monitored to find a balance between efforts to reduce undernourishment and efforts to encourage food production in the food aid recipient countries. The U.S. now provides about $1.5 billion per year of food aid or about 5 percent of its total agricultural export sales.

13. AN EFFECTIVE WAY TO HANDLE PERIODIC FOOD SHORTAGES IS TO CREATE A WORLD GRAIN RESERVE.

True______ False______

In the short-run a modest reserve of grain can help alleviate food shortages caused by war, drought, floods, or earthquakes. However, in the longer-run, food production must be emphasized if major food shortages are to be averted.

14. THE GREEN REVOLUTION WAS A FAILURE.

True______ False______

The high-yielding varieties of wheat and rice along with fertilizer, pesticides, and improved water control made it possible to double and even triple yields. In some cases land owners who were earlier adopters of the new technology did receive a substantial profit and land values were bid up.

Higher yields and double or triple cropping also increased the demand for labor to plant and harvest the crop, build and repair machinery, process and transport the grain, and install irrigation facilities. Also food supplies were increased and food prices were less than they otherwise would have been. This is especially important for low-income people who spend a substantial share of their income on food.

15. THE WORLD IS RUNNING OUT OF LAND ON WHICH TO GROW FOOD.

True______ False______

Only about half the world's potentially arable land is currently in crop production. But the land that can more easily be brought into production is already under cultivation.

The best cropland is not equitably distributed among countries. Most of the arable crop-land in Asia and Europe is under cultivation. In other parts of the world major capital in-
vestments in roads, land clearing, irrigation, marketing systems, and research will be required to expand the area under cultivation.

16. MORE FERTILIZER AND PESTICIDES RATHER THAN LAND MAY BE THE KEY TO INCREASED FOOD PRODUCTION IN THE NEXT DECADE OR SO.

True ______ False ________

Since World War II, much of the expansion in agricultural production, especially in the developed countries, has been largely due to the increased use of agricultural chemicals and fertilizer. They will continue to play a prominent role in the near future.

However, rising petroleum prices and growing environmental concerns suggest that alternative means of maintaining and expanding food production must be sought.

17. AGRARIAN REFORM IS ESSENTIAL IF THE WORLD FOOD PROBLEM IS TO BE SOLVED.

True ______ False ________

Agrarian reform is often suggested as the primary ingredient in any solution to the world food problem. It is true that in some countries, particularly in Latin America, a large portion of the land is owned by a few wealthy families or corporations. In some cases redistribution of the land among peasant farmers may merit implementation from a perspective of economic justice. However, often when there has been a major agrarian reform, examples Bolivia or Mexico, farm production actually declined. A complete package of price incentives, technology, availability of modern inputs, marketing infrastructure, and political stability must accompany the agrarian reform if it is to be successful and food supplies are to increase.

In many cases investment in public education and vocational training coupled with improved off-farm employment opportunities can encourage a change in the structure of agriculture in such a way as to increase rural income levels and agricultural output simultaneously.

The rates of return to public investment in education have been found quite high in most developing nations. In many cases such an approach can assist the modernization of the agricultural sector and reduce poverty with less of the political and economic disruptions that have often accompanied a major agrarian reform.

18. WITH TODAY'S SOPHISTICATED INFORMATION SYSTEMS, WE HAVE RELIABLE INFORMATION ON WORLD FOOD SUPPLIES FROM ONE YEAR TO THE NEXT.

True ______ False ________

Unfortunately, the agricultural information system in many less-developed countries is very inadequate. Moreover, in some more advanced countries agricultural information is not made public and is only available to top level government officials; prime examples are the Soviet Union and the Peoples' Republic of China.

Weather is a major determinate of yearly variations in food supplies. However, our
ability to predict weather and, consequently, forecast crop yields is still limited. New developments in computer and satellite technologies show great promise for future improvements in weather and crop production forecasting.

19. IF THE WORLD POPULATION AND WORLD FOOD PRODUCTION CONTINUE TO GROW AT CURRENT RATES THERE WILL BE A MAJOR WORLD FOOD SHORTAGE IN THE NEXT DECADE.

True _______ False _______

On the average world food supplies are expected to stay ahead of population growth. But, as suggested by several studies by the International Food Policy Research Institute, cereal grain deficits could occur in some of the developing market economies of Asia, Africa, and Latin America. Such shortages can be averted by taking appropriate policy action now to encourage food production, acquisition of strategic grain reserves, reduction of barriers to trade, and increasing expenditures on agricultural research and extension activities.

In many less-developed countries, putting more national resources into food production would provide a higher social payoff than many of the alternative uses of these resources.

20. WE NOW POSSESS THE NECESSARY TECHNOLOGY TO INCREASE FOOD PRODUCTION ENOUGH TO MEET THE EXPECTED GROWTH IN FOOD DEMAND.

True _______ False _______

It has taken since the beginning of time to learn how to feed 4 billion people, and about one-half billion of them are inadequately fed. If we are to adequately feed a population of 6 billion by the year 2000, major breakthroughs in science and technology are required.

Although no one can perfectly forecast the future, there are some exciting research activities underway such as the biological fixation of nitrogen by grasses, improved weather and crop forecasting, nutrition, and photosynthesis. In the recent past the social and private rates of return to investment in research have been quite high. Additional funds and creative talents are needed if the necessary technology required to adequately feed the world’s population in the year 2000 and beyond is to be discovered.

ANSWERS

In the judgment of the author, these are the best answers to each question.

1. False 11. False
2. True 12. True
3. False 13. False
4. True 14. False
5. False 15. False
6. False 16. True
7. False 17. False
8. False 18. False
10. True 20. False
REFERENCES

This paperback book provides an excellent overview of trends in food production in the U.S. and discusses the prospects for continued technological change.

This book contains a collection of manuscripts by farm leaders, nutritionists, economists, and policy-makers. The book provides insights on the ethical as well as more technical aspects of world hunger and the responsibility of the United States.

This book deals with the problems of environmental stress and their effects on world food prospects.

This is the background document prepared by the FAO for the World Food Conference of 1974 in Rome, Italy.

This study provides an insightful evaluation of the potential for shortages in the developing market economics in the 1980's. The authors are respected economists and statisticians on the staff of the International Food Policy Research Institute, one of twelve international agricultural research centers.

This is a follow-up study to one published in 1976 by the International Food Policy Research Institute.

This paperback book offers sound economic analysis of agricultural and trade policies in the developed and developing nations. It is written in a style that can be easily understood by a layperson.

Dr. Johnson is a professor of economics at the University of Chicago. This paperback book provides an insightful analysis of the events which led to the world food crisis of the mid 1970's.

This book looks at some of the private and public institutions involved in the production and distribution of food. The authors suggest that major institutional reforms and changes in people’s attitudes are essential if the problem of world hunger is to be solved.


This paperback book is written by a political scientist and a plant pathologist. Consequently, it offers a broad overview of the world food problem from both the technical and public policy perspectives. It is based on presentations by various experts and their interaction with students in a special interdisciplinary undergraduate course at Purdue University.


This issue provides an extensive overview of the world population problem; past, present, and future.


This entire issue contains a series of articles by leading scientists on the world hunger problem. The articles are well illustrated and cover the problems of food production, food distribution, human nutrition, and technological change in both the developed and less developed nations.


This paperback book is an excellent study guide for those who seek an interrogation of the technical and moral aspects of the world hunger problem.


This is a more technical evaluation of the world food situation which was prepared by the United States prior to the World Food Conference in Rome, Italy in 1974.


This paperback book contains the recommendations by the National Academy of Sciences, based on a careful study by leading scientists, on the high priority topics for future research to help increase food production and improve people’s diets.

*Your Food: A Food Policy Basebook*, National Public Policy Education Committee, Cooperative Extension Service, November 1975. (May order from Cooperative Extension Service, Purdue University, West Lafayette, IN 47907)

This publication and a companion leaflet series addresses the questions of (1) Will there be enough? (2) Who will get it? (3) How will it be shared? (4) Will it be good for you? (5) Who will control it? and (6) What are the politics of food policy? It is prepared by leading agricultural and home economists and is well illustrated. A set of slides, which accompanies each of the six chapters in the basebook, is also available.