

# **WORLD CRISIS IN AGRICULTURE**

# **WORLD CRISIS IN AGRICULTURE**

*by* Gary Alexander and the Ambassador  
College Agricultural Research Department



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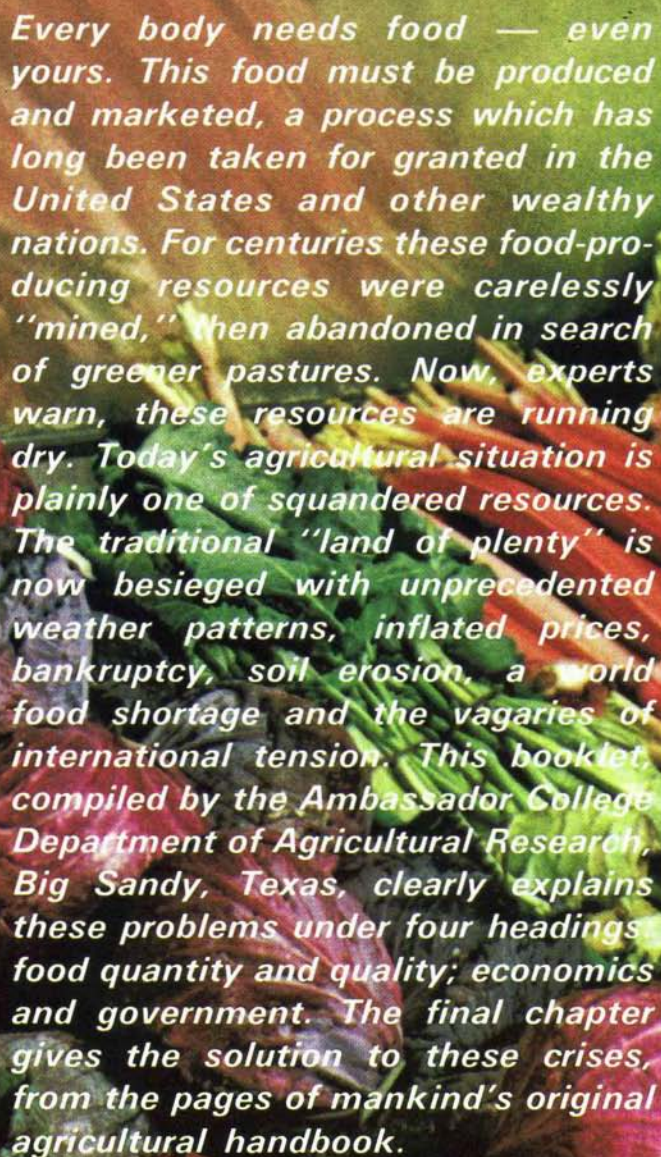
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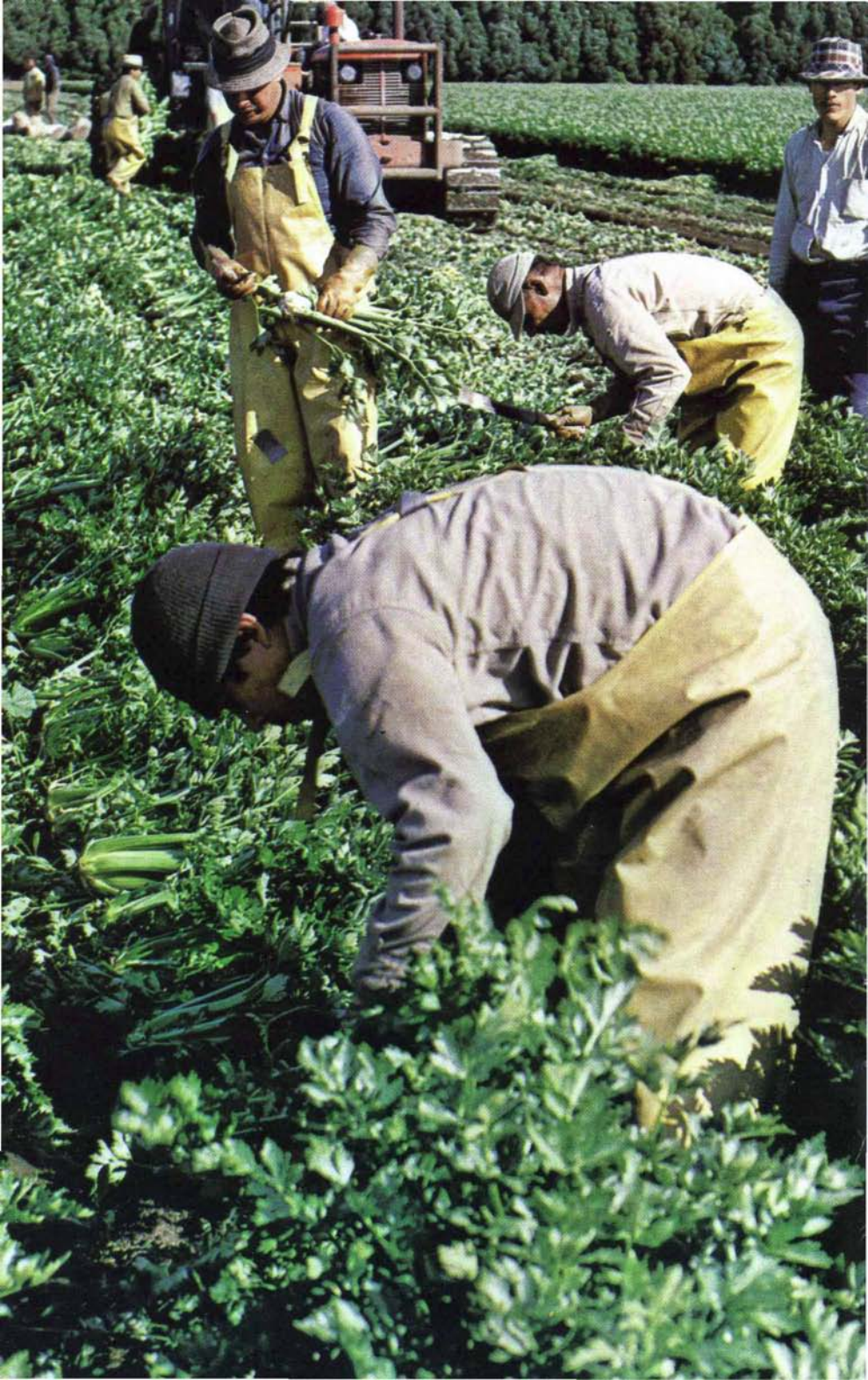
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VEGET



*Every body needs food — even yours. This food must be produced and marketed, a process which has long been taken for granted in the United States and other wealthy nations. For centuries these food-producing resources were carelessly "mined," then abandoned in search of greener pastures. Now, experts warn, these resources are running dry. Today's agricultural situation is plainly one of squandered resources. The traditional "land of plenty" is now besieged with unprecedented weather patterns, inflated prices, bankruptcy, soil erosion, a world food shortage and the vagaries of international tension. This booklet, compiled by the Ambassador College Department of Agricultural Research, Big Sandy, Texas, clearly explains these problems under four headings: food quantity and quality; economics and government. The final chapter gives the solution to these crises, from the pages of mankind's original agricultural handbook.*



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## THE QUANTITY CRISIS:

# The Land of Plenty ?

**A**MERICA — the land of plenty, breadbasket of the world!

For nearly 200 years American food stocks have comfortably fed America's people, often with enough left over to help less fortunate nations. Despite man-made or weather-caused shortages, no American generation has suffered through the pangs of massive famine, such as Biafra, India, sub-Saharan Africa and Bangladesh have recently experienced. Food shortages, when they occurred, have been local and temporary in America.

To American eyes, such food shortages seem to occur only in lands where gaunt oxen pull knotty wooden plows through mud-slogged soils, or where gnarled hands eke out a bare existence upon yellow, eroded soils amid squalid huts. To most Americans, all such pain is safely segregated — south of the border or far across the ocean.

### America's Food Chain

Could such famines ever strike in prosperous, abundant, vibrant America? Take a look at the average American farmer. Though his productivity is enviable by world standards, a closer look reveals that the American farmer could easily suffer the same fate as his Asian counterpart. By scrutinizing the average American farmer and his dilemma, we can see seven interdependent potential problems of crop production:



- 1) New cropland is running out
- 2) Seeds and livestock are genetically vulnerable
- 3) Soil fertility is declining
- 4) Energy sources are scarcer
- 5) Manpower is more expensive
- 6) Weather is unpredictable
- 7) Storage and distribution problems are increasing.

These seven steps, listed in chronological order from land to larder, comprise a *food chain*. Complete failure of any one link, or partial failure of several links in the chain, could bring catastrophic food shortages.

### I. No More Land

There is no unexplored "El Dorado" left for mankind to farm. America, long the breadbasket for some "have-not" nations, is now becoming more concerned with feeding *itself*. Lester R. Brown, leading American agricultural expert, recently stated that at least half of America's 50 million acres of reserve cropland would have to be put back into production. In 1974 it was. However, most of this remaining cropland is so marginal that erosion and fertilizer shortages cancelled out most of the expected gains.

"For the first time since the end of World War II," he added, "the world is without either of the two important safety valves in the world food economy — surplus stocks of grain and a large reserve of United States cropland that could readily be brought back into production."

New acreage is only half the problem. The declining quantity and quality of current acreage is even more serious. An estimated 400,000 productive farm acres are lost each year in the United States due to erosion. Millions of other acres are partially lost due to wind and water erosion.

In addition, over a million acres of United States land — much of it prime agricultural farmland — are lost each year to highways, housing additions, shopping centers, and other suburban developments. According to one exhaustive computer study, entitled *The Limits to Growth*, nearly half of all arable land available for agriculture will be consumed by urban-industrial growth before the year 2050. Meanwhile, population will quadruple!

## II. Genetic Vulnerability

Another potential problem within agriculture's "quantity crisis" involves the type of *seed* used. As the June 1971 *Scientific American* warned: "Hardy high-yield varieties of major food crops, carefully crossbred and highly selected, are the success story of modern plant genetics, but they may carry the *seed* of their own destruction."

These seeds, when sown by machine, must be uniform in size and shape, and the fruit, to be reaped by machine, must be uniform in size and shape, too. The seeds or fruit must also ripen at the same time to be harvested economically.

For this reason, most major food producers utilize only a very few seed varieties per crop. Two genetic pea types, for instance, account for 96 percent of the entire pea crop in the United States. Using only one or two seed types, however, increases vulnerability to decimation by just *one* virus, fungus, or other disease.

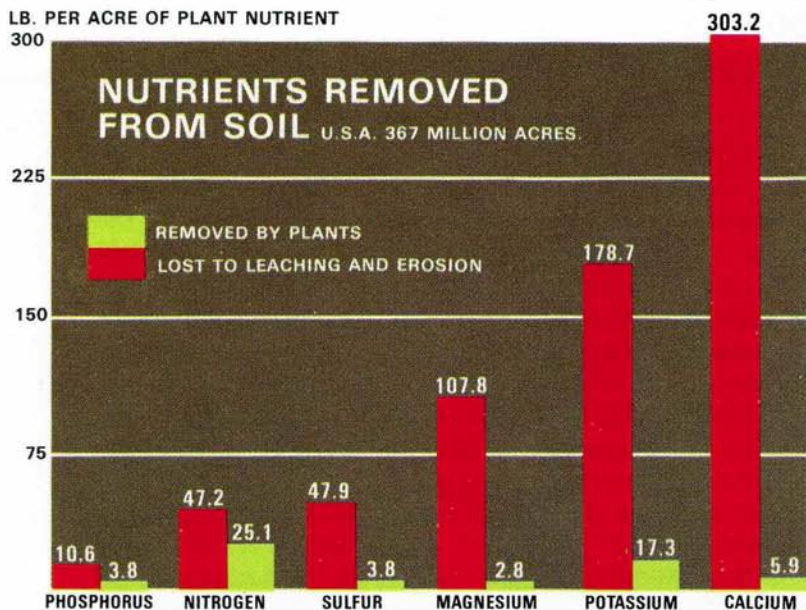
For example, consider the corn blight that diminished the U. S. corn crop by about 700 million bushels during the summer and fall of 1970. The disease, a fungus which attacks both the leaves and grain of corn, affected plants with a "T-cytoplasm" genetic strain, which included 90 percent of all hybrid corn grown in the United States.

This vulnerability to disease stems from the very narrow base of genetic variation of a crop. Most major crops have a genetic uniformity which aids the efficiency of agribusiness, but opens the crop up to widespread pathogenic disease.

## III. Declining Soil Fertility

The life-saving topsoil on our planet averages only seven inches in depth — equivalent to an invisible film three-millionths of an inch thick on a desk globe — yet nearly all the matter constituting our food, clothing, and shelter comes from it. Four billion humans depend on this thin layer for life. How long can the world's productive

LB. PER ACRE OF PLANT NUTRIENT



topsoil withstand the combined onslaught of erosion, improper fertilization, and over-farming?

The extent of soil erosion in America is massive, but the loss of soil *nutrients* by erosion is even worse than the volume of erosion would indicate. In New Jersey, for instance, soil materials removed from test plots by the selective action of erosion contained 4.7 times as much organic matter, three times as much phosphorus, and 1.4 times as much potassium as the original soil in the plots. Erosion takes the prime ingredients of soil and leaves the dross behind.

Another sign of declining soil fertility is the advent of artificial fertilizers. Chemical fertilizer is the "fuel that has powered the Green Revolution," according to 1970 Nobel Peace Prize winner Norman A. Borlaug. In order to feed the new hybrid crops of corn, wheat, sorghum and rice constituting the "green revolution," it is absolutely essential to churn out more and more tons of fertilizer.

Unfortunately, great quantities of natural gas, electrical energy, and other energy forms needed to produce these fertilizers are in short supply and are ultimately nonrenewable.

#### IV. Energy Crisis on the Farm

While the number of American farmers has been cut in half this century, the average acreage of farms has more than doubled, from 150 acres to 380. To face the challenge of "produce or perish," farmers have become almost entirely dependent for their survival on machines and the energy sources which run these machines.

In 1850, fuel sources on the farm were 95 percent naturally renewable (men, animals, wind, water, and wood), while today 95 percent of energy sources used are *nonrenewable* (coal, oil and natural gas). Not only are many of the products of the latter forms of energy harmful to the environment, scarce and expensive, they also can *never be retrieved or renewed*. Shortages of these fuels are therefore inevitable.

A farmer depends on a heavy supply of fuel at certain times of the year, rather than a constant steady small supply, such as urban homeowners and automobile drivers need. In the spring of 1973, however, as planting was in full swing, fuel was often unavailable. Cotton crops just sprouting could not be tended; preparation and planting on some farms was halted. Longtime fuel customers waited precious days for delivery of their fuel.

Prevention of similar or worse fuel crises appears to be impossible. A cold winter with excessive drains on fuel reserves, a Middle East confrontation, or organized labor disputes within the oil industry could jam the brakes on vital sectors of agriculture again.

Attorney General William Saxbe noted the irony of America's upside-down priorities when he said: "I think when farmers can't get enough gas to harvest their crops at the same time thousands of persons are burning up gas in recreational pursuits, *rationing is very possible.*"

#### V. Manpower Problems

U. S. Secretary of Agriculture Earl Butz has stated that more young, progressive, and educated blood needs to be injected into the life veins of agribusiness. Yet the average farm operator is 55, and his 20-year-old sons and

daughters are rapidly heading for the cities, for economic as well as personal reasons.

First look at the economic factors. The average beginning farmer needs the highest outlay of capital among all United States businesses, including steel manufacturing. A young farmer needs in excess of \$200,000 to set up an average 400-acre corn and poultry farm in Nebraska. Many farm youth are turned off at the prospect of eternally being in debt (more on this economic crisis in chapter three).

Besides the cold, hard economics of farming, personal reasons also drive youths from the farm — the modern ideal of “pleasure before work” has gripped a large share of younger America. A hard day’s work under the sun is spurned in favor of a higher-paying desk job. High-paying jobs are in the cities, while most farmers are unable to pay an equivalent wage.

Another major labor problem is the recent trend toward unionization of farm labor. No longer is the “family farm” the only primary production unit. Corporations run many of the largest farms, and large corporations usually engender large labor unions. Both sides demand justice, and the consumer is caught in the middle.

Should an organized farmer’s union ever gain widespread membership, it is feasible that a strike — a food holdout — could rapidly deplete supermarket shelves and storage bins. In 1973, National Farmer’s Organization livestock and milk “holding actions” (strikes) were a small premonition of more disruptive food strikes in the future.

## VI. Unpredictable Weather

Every link in the food chain discussed so far is extremely important, but one factor stands out above all others. No other factor can spell famine faster than bad weather; yet this one factor is mostly out of man’s control.

The most important aspect of weather is precipitation. In 1972, for instance, Russia was hit by insufficient snow cover which caused much of its winter wheat to freeze out. Then late spring rains delayed planting, followed by a summer drought which decimated that late



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***Island Farms***, shown here during the April 1969 floods near Fargo, North Dakota, were also a common sight during the spring of 1974 in the U. S. Midwest.

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planting. Later, autumn rains came which impaired harvest, resulting in their worst wheat crop in 100 years.

The United States is fortunate in having had many years of favorable weather, or bad weather “saved” in the end by “rain in due season” or a timely thaw. Following the devastating floods of 1973, for instance, skies quickly cleared, fields dried, and farmers in most areas were able to plant their crops. Had the rains continued much longer, farmers would have been in deep trouble.

Some day, those needed rains and breaks in the weather just won't come! Right now in 1974 we are experiencing the driest year since the 1930s. Meteorologists don't give us much encouragement. Drought is “overdue,” according to many and according to the 20-year cycle of drought dating back 100 years. Prolonged dryness in some areas (and excessive rain followed by drought and hot winds in others) have already inflicted

heavy losses on 1974 crops. Yet few people in today's air-conditioned society truly worry about weather.

How much odd weather is caused by man's intrusions into the environment? Experts are still debating this, but one cost to agriculture is sure: the "ill winds" of air pollution reap at least \$500 million in crop loss annually.

## VII. Food Storage and Distribution

Very little food is eaten as soon as it is harvested. Most food travels hundreds of miles and many days before it is consumed. In order for man's fragile food chain to survive, harvested crops must be kept safe from wasteful rots, fungi, insects, and animals. How has this battle been faring?

In the world at large, not very well! The United Nations Food and Agricultural Organization termed storage losses as "enormous." Nobel Prize winner Sir Robert Robinson estimated storage losses as between 15% (average in the U. S.) and 35% (in underdeveloped nations) lost to pests or diseases.

Even in the United States, a possible energy shortage could mean losses of refrigerated meats and vegetables. Severe weather problems could impair storage and distribution, and a labor strike would also hold up the vital links of distribution. As with all links in the food chain, distribution is subject to the whims of fuel shortages, snowstorms, floods, internal political crises, and simple oversights, such as a "boxcar shortage" which has struck the United States railroads in recent years.

Alert to these dangers, many farmers have bought their own grain bins, storing as much of their own produce as possible. Wheat farmers, fearing they may get burned again by artificially low prices or a "wheat deal" with a foreign nation, are prepared for next time. But is the *consumer* prepared?

The seven links in the food chain, described above, show just how vulnerable, how fragile, how "finely tuned" our ultra-technological, highly sophisticated and interdependent economy is. Never before in man's history has so much food depended on so few food producers. It is truly man's greatest gamble!

### Another Quantity Crisis

While modern-day agronomists diligently treat half of the problem — food quantity — the “other” quantity crisis continues apace: runaway *population*. With 70 million new mouths to feed each year, no nutritional equation can ignore the sheer volume of humankind to feed. As Dr. Paul Ehrlich said: “Whatever your cause, it’s a lost cause without population control.” Such control is not a panacea, but it *is* a necessary beginning step.

The vast majority of the world currently suffers from *both* crises of quantity: not enough food and too many people. Each year, five million people starve to death, and each night half the world goes to bed (and wakes up!) hungry. But this, Americans think, is a crisis that will never attack their own families.

This chapter has shown you otherwise. America’s food economy is dangerously fragile for the following reasons:

- 1) The quantity of food produced is often beyond man’s control. Various external factors, such as disease or weather, affect the food chain and can easily upset it.

- 2) The food production chain is integrally linked to the remainder of the economy. If the economy fails, so will food production and distribution, as in the Depression of the 1930s.

- 3) Each of the seven vital links in the food chain is integrally linked to the others. A break in one link, or a wearing of many links, would severely affect the entire food chain.

So far, America and the West have been spared, but is time running out within “the land of plenty”?





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**THE QUALITY CRISIS:**

# Foodless Foods

**S**OMETHING is basically wrong with American health. Between 1950 and 1970, the nation's health expenses rose from \$12 billion to over \$70 billion, yet life expectancy during that time actually declined. A majority of America's poor have woefully inadequate diets, yet an even more shocking fact reveals that three out of eight (37%) of the *upper-class* also have nutritionally deficient diets.

More than half of all Americans die of cardiovascular (heart and blood vessel) diseases — or double the rate in European nations, and seven times the rate of Japan. In 1900, cancer accounted for only 3.7 percent of deaths in America, but that rate has jumped fivefold, to 18% today.

A logical question arises: Why can't affluent America buy better health? Another question — appropriate to this booklet — is: How does our *agriculture* affect our health?

## Soil Health

Individual health begins with healthy soil. Soils vary widely in composition, but most fertile soils are defined as "the highly dynamic, living, breathing combination of rock and mineral particles, organic matter and humus, large

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*Corn Blight* descended like a mushroom cloud over the 1970 corn crop, diminishing U. S. corn yields by 700 million bushels (left: Mishawaka, Indiana, September 1970).

and small air and water pores, and a vast array of small animal and plant organisms.”

Dr. Louise F. Gray, a biochemist and member of the staff of the U. S. Plant, Soil and Nutrition Laboratory wrote: “The soil is the source of all the minerals the plant contains. With these and with water, carbon dioxide from the air and energy from the sunlight, the plant synthesizes the organic components — carbohydrates, fats, proteins, and vitamins — that man and animals need for life” (FOOD, 1959 *Yearbook of Agriculture*, p. 390).

The organic matter of the soil serves as a storehouse for many important plant nutrients. Over 95% of the soil's nitrogen, 98% of the sulfur, and up to 60% of the phosphorus reserve may be stored there. Humus, a product of organic matter decomposition, is also important as a soil conditioner and colloid, which makes the soil suitable for plant growth.

Humus-rich land absorbs heavy rain into the soil, while humus-poor soil allows rapid runoff and soil erosion in even a light rain. Centuries of soil formation and favorable weather has given virgin soil in America an abundance of humus, nitrogen and organic matter. The single most important responsibility of agriculture today is to replenish, rebuild and maintain that soil fertility.

### Soil Depletion

Many of today's deserts, jungles, and wastelands are the farmlands of yesteryear. They were ruined through improper agricultural management. Early Americans, for instance, “mined” this virgin American soil until it lost much of its fertility. Then they moved on to “rape” yet more acres of virgin soil.

In 1860, every American had 60 acres per capita, most of it untouched and “undeveloped.” By 1900, the average American had only 25 acres; he had 15 acres in 1930; and less than 10 acres today. Just one-fifth of American soil is devoted to cropland, so, in effect, each American has two acres from which to wrest enough nutrients to live.

Most American land is eroded, in need of immediate conservation and care, according to the U. S. Soil Con-

ervation Service. The fertility of the remaining soil is declining, since more plant nutrients are taken out each year than are added. The health of a nation's citizens is proportional to the nutrients in the soil, and in America at least *both* are declining.

Between 1950 and 1970, the vast implementation of chemical fertilizers increased yield per acre by 53%, although it took 700% more fertilizer to accomplish this growth. But fertilizer mainly increased the *quantity* of crops, not the *quality*. In the Asian "Green Revolution," beginning in 1965, the *quality* and edibility of crops also declined although quantity increased.

Excessive use of nitrogen fertilizers has at times resulted in nitrate toxicity in livestock and high nitrite levels in canned and frozen processed vegetables. Wide varieties of soil have been loaded with too much of the wrong types of fertilizer, while the right balance of available minerals and organic matter would *build up* soil fertility.

A beginning solution to the soil fertility problem is the use of animal manure as fertilizer, yet in most areas the animals and crops are segregated and "ne'er the twain shall meet."

### Variations in Food Quality

Ecologists like to look at the earth as a large space capsule — a limited biosphere with its own self-contained life-support system. This "biosphere" is the thin sheet, extending five miles above sea level and, in places, five miles below, and covering the 200 million square miles of the earth's surface. Within that thin lacquer layer of your desk globe, virtually all life forms thrive and interrelate in dozens of cyclical systems.

The cycle of food nutrients is just one of many such systems. The nutrients in food depend on the soil, the weather, the seed and soil management. Those nutrients which are taken away by harvest can be returned through the judicious use of food "waste," thus completing the cycle. America's nutrient cycle, however, is an "open" system — commercial fertilizer alone does not complete

the cycle. Consequently, soils become depleted or imbalanced, causing foods to vary widely in nutritional value.

As an example of the variation in food nutrients, the National Canners Association tested various fruits and vegetables for consistency of vitamin C. For the same amount of orange juice, vitamin-C content ranged from 11.1 to 52.2 milligrams per 100 grams, spinach varied from 3.4 to 35.5 milligrams, and tomato juice varied from 1.8 to 45.5 milligrams per 100 grams.

The variation in trace minerals was even more extreme. Processed milk has run from 362 parts per million (ppm) of iodine down to *zero* ppm, while vegetables grown on soil in one part of the country assay 1100 ppb (parts per billion) iodine, against 20 ppb elsewhere. This severely affects human health; especially was this so before iodine was added to table salt.

Minerals such as iron and zinc are very important for soil fertility and human health, yet iron in spinach has varied from 10 ppm to 1584 ppm, and iron in tomatoes has varied from 1 ppm to 1938 ppm. Zinc, though less publicized, is also vital to health, but has become deficient in many of the major fruit and vegetable growing areas of the U. S.

Climate affects nutritive qualities of crops in several ways. The protein content of small grains such as wheat is higher in hot, dry climates and is lower in moist, cold climates. The nitrogen and mineral content of soils in dry, hot regions generally is higher because less leaching of these nutrients occurs than in wet regions. A limited moisture supply means that less vegetative growth takes place, and more nitrogen is available for grain production. High protein grain is produced in dry years and lower protein grain in wet years.

Studies in North Carolina showed calcium and vitamin C content of crops to be 35% and 39% higher, respectively, in the spring than in the fall. This was attributed to differences in weather. Vitamin C in tomatoes and turnip greens was also directly correlated with exposure of the tomato fruit or the turnip leaf to sunlight during the period just before harvesting. Vitamin C in turnip greens

varied directly with light intensity, with 28.2 mg under lowest light intensity, and 235.5 mg under highest light intensity. Fertilizer treatments such as nitrogen have been associated with reduced levels of vitamin C in the fruits.

Weather factors such as temperature and rainfall affect plant composition indirectly through their effect on soil formation and mineral availability. Soils that have a high content of organic matter absorb and hold more moisture and tend to be drought resistant. Organic matter in the soil also tends to stabilize soil temperature, keeping it cooler in the hot summer and warmer in the winter.

Soil fertility, weather and climate all affect the nutritive quality of plants and the types that can be grown in a given area.

### **Genetic Quality and Vulnerability**

In the first chapter, seed varieties were shown to be, on the whole, monocultured hybrids more vulnerable to blight and disease. The reason is that seeds are chosen for their yield potential and uniformity of crop, rather than quality. The public has apparently not been interested in paying extra for higher nutritional quality.

According to the USDA Plant, Soil, and Nutrition Lab in Ithaca, New York, "different plant species exhibit marked variation in their ability to extract required nutrient elements from . . . the soil. Different varieties of the same crop species grown on the same soil contain different levels of mineral elements."

All links in the agricultural chain — consumers, processors, farmers, government agencies, agricultural colleges, plant breeders and the food industry — have demanded, encouraged, and promoted genetic uniformity at the lowest price.

We have already described the 1970 corn blight as an example of genetic vulnerability. Another example is the potato blight that triggered the tragic famine of Ireland in 1845, which wiped out one-third of the population of Ireland and caused another third to emigrate to America and Europe. Genetic uniformity and crop monoculture provide the ideal invitation to famine or plague.

Genetic diversity is the best insurance against such vulnerability. Educated farmers can do their own breeding and selection of seed varieties adapted to their local soil and weather.

### The Purpose of "Pests"

The USDA estimates crop loss due to weeds at \$5 billion per year in the U. S., and a similar \$5 billion loss due to insects. This represents almost a one-third loss of potential crops. To combat these twin ravages, three-fourths of all fruits and two-thirds of all vegetables are treated with insecticides (to kill bugs), and one-fourth of all crops are treated with herbicides (to kill weeds). These pesticides are toxic to animal and plant life, of course, because that is their purpose.

More than a billion pounds of pesticides are known to have already accumulated in the earth's air, water, soil and life forms, and each link in the food chain multiplies the poison's toxicity. Pesticide concentrations increase an astounding ten million times from sea water levels to the highest level, birds eating fish.

Despite this insecticide saturation, the distressing fact is that insects on plants still abound. This is because their predator insects were also killed, while at the same time *mutated* pest strains survived because of resistance to certain pesticides.

Less than one percent of insect species are considered "pests." The other 99% (including bees, wasps and butterflies — the plant-pollinating species) are also wiped out. These "innocent bystanders" serve as aerators of the soil, predators of insects, and scavengers of animal and plant waste. Yet they too are killed.

Sir Albert Howard observed that even the *pests* are valuable, and should not be indiscriminately killed:

"Insects and fungi are not the real cause of plant diseases but only attack unsuitable varieties or crops imperfectly grown. Their true role is that of censors for pointing out the crops that are improperly nourished and so keeping our agriculture up to the mark. In other words, the pests must be looked upon as Nature's professors of



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**Two-thirds** of all vegetable crops in the U. S. are sprayed with insecticides. Here, in the San Joaquin Valley near Bakersfield, nearly half of the nation's vegetable crops are grown.

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agriculture: as an integral portion of any rational system of farming.

“The policy of protecting crops from pests by means of sprays, powders, and so forth is unscientific and unsound as, even when successful, such procedure merely preserves the unfit and obscures the real problem — how to grow healthy crops” (*An Agricultural Testament*, p. 161).

### **Overfed and Undernourished**

“You are what you eat,” has become a cliché, but it's still true. Your body's 30 trillion cells must be replaced by the billions of new cells each day from the food you take in. More than 50 known nutrients in proper balance are the building blocks of these new cells. All of your red blood



cells, for example, must be replaced every four months within the bone marrow.

According to the USDA surveys, each year people ate nutritionally better until 1960. But between 1960 and 1970, the trend was toward "empty calories" (candy, chips, liquor, sweets and fats). The average overfed and undernourished American now eats 115 pounds of refined sugar each year.

An increasing amount of our food is processed and packaged before it reaches our plate. In 1940, only 10% of food was processed, but today fully *half* of all food is highly processed. Transportation, storage, handling and processing of food often leads to a reduction in nutrients at each stage.

### **"Enriched and Fortified"**

According to Dr. Jean Mayer, the leading American nutritionist, "vitamin-enriched junk is still junk. If you start out with no nutrition, or if you take out 20 nutrients and you add 3 or 4, you still don't have anything very remarkable." Nutritional biochemist Dr. Roger Williams noted that rats fed on commercially "enriched" flour died from malnutrition!

Dr. Mayer added that "enrichment is no substitute for eating enough unprocessed foods and vegetables," yet food companies spend well over \$1 billion annually to advertise what are the *least* nutritious, and most highly processed, foods. If your tissues could talk or your cells could advertise, you would be buying and eating the opposite of what is pushed in most "food" ads!

Government regulations and controls, while grading foods for price and safety, make little mention of nutritive value. "Generally speaking," said one, "our standards of quality are based on appearance, texture, uniformity, marbling, and so on." In fact, "prime" grade beef contains 18 percent *less* protein and 46 percent *more* fat per pound than the cheaper "good" grade.

The only solution is for each citizen to study and understand the principles of nutrition. The medical and scientific professions should be leading in this study, but

“until very recently it [nutrition] was not taught at all in medical schools, and even now it is not taught in the vast majority of them” (*U.S. Nutrition Policies in the Seventies*, Jean Mayer, ed., 1973, p. 9).

### The World's Quality Crisis

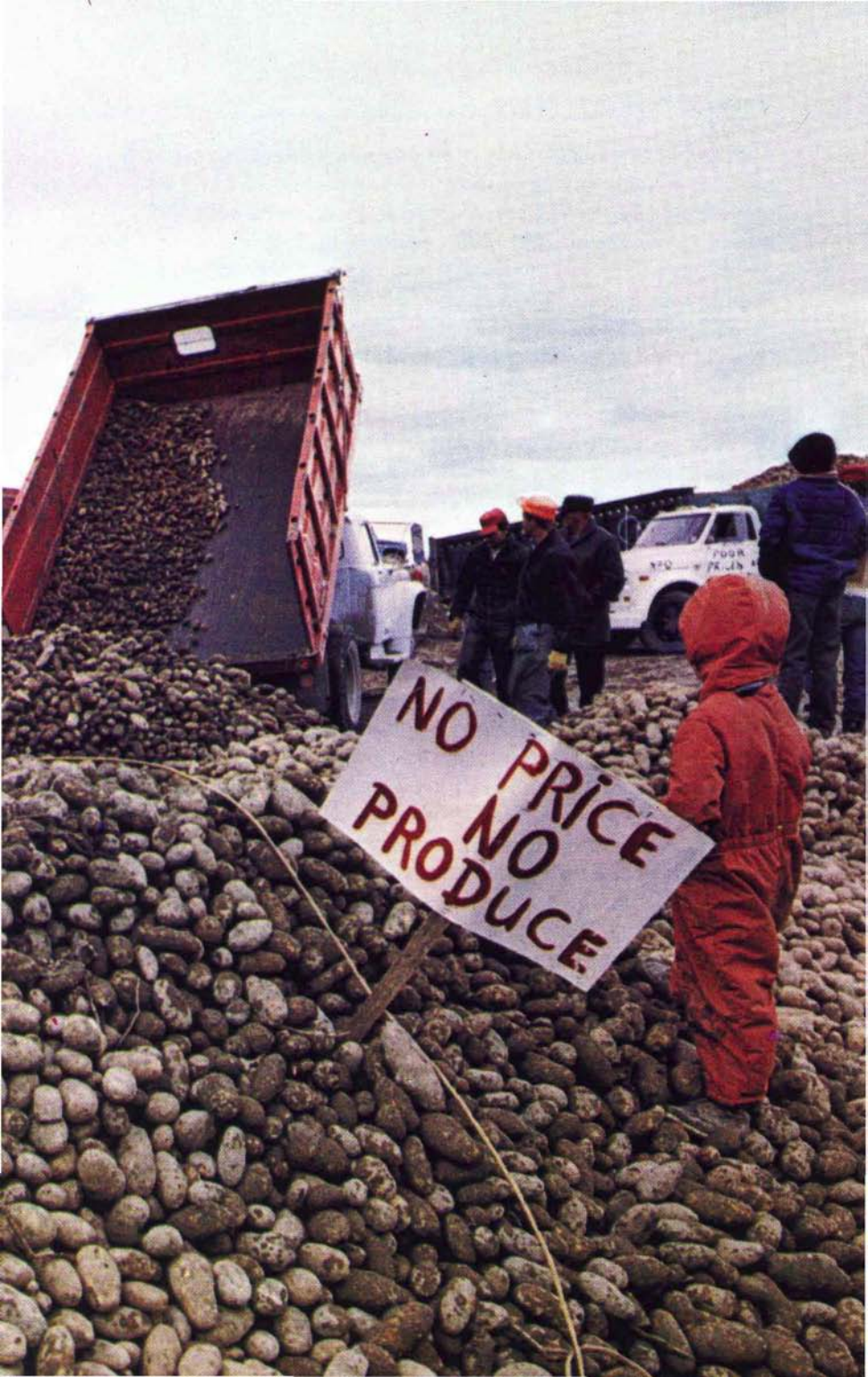
The world at large presently suffers both in quantity (the “eternal compulsory fast,” as Mahatma Gandhi called it) and *quality*. While ten thousand starve each day due to lack of quantity, more than 50,000 die each day due to diseases of malnutrition (lack of food quality).

Protein deficiency is a major problem. In Africa this disease is called *kwashiorkor*, or literally, “the disease the older baby gets when the new baby comes.” Since mother's milk is the only protein available to such children, the older (age 2-4) child begins to swell in the belly, his hair turns gray, his skin cracks, and he slowly dies in mute misery.

Nutritional diseases also plague the poor of America, especially the elderly and the poor children of broken families. The greatest irony is among the migrant laborers who actually harvest America's bumper crop. They see the food each day, but can't afford to buy it.

The “quality of life,” however, means more than money. Many poor people make nutritional ends meet, but the life-style and eating habits of the rich often make their dietary habits worse than some of the poor. Many poor tribes of the world routinely live to be 100 years old, due to natural foods and a peaceful life-style: the Mabaans of the Sudan, the Hunza's of Kashmir, the Abkhasians of Georgian Russia, the Andeans of Ecuador, and other small tribes. Their rate of centenarians (those living beyond age 100) is up to 20 times that of the U.S.

There is no gene or magic medicine that is a modern “fountain of youth.” Physically, you *are* what you eat; and mentally, you are what you *think*. It is time to put *quality* back in both.



NO PRICE  
NO  
PRODUCE

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**THE ECONOMIC CRISIS:**

# Finances on the Farm

**T**HE AMERICAN farmer has essentially suffered 40 years of economic depression, in two stages — from 1920 to 1940, and from 1952 to 1972. This has commonly been referred to, by economists and politicians alike, as the *farm problem*. Economic fluctuations since 1972 brought new hopes to some, but disaster to others. The Golden Age of Agriculture, which many farmers are trying to recapture, was from 1900 to 1920 and to a lesser extent the 1940s.

Inflation hurts every American, but the farmer has been hurt most. Between 1940 and 1972, inflation quadrupled average prices in America, but prices for foodstuffs did not even *double*. Despite that slight increase in food prices, the farmer had not increased his *share* of that doubling. While the price of a loaf of bread doubled (between 1940 and 1972) from 13¢ to 25¢, the retailers earned 120% more, the baker and wholesaler got 94% more, and the farmer who raised the grain got *no* more percentage. He continued to earn his 3½¢ per loaf!

In other words, the American farm has been subsidizing the high American standard of living. Americans spend the lowest share (16%) of their national income on food —

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*Millions of potatoes were wastefully destroyed in Idaho in 1970, when the market price was too low to defray the farmer's harvesting and transport costs.*

while Englishmen spend 29% of their income on food, Italians 45%, and Indians 80%.

The food boycotts of 1973 apparently demonstrated that the American consumer has decided he should be supplied with low-cost food, regardless of what it costs the producer. If consumers were educated to the problem, however, they would not boycott food, the end product of a complex chain, but rather "boycott" bad weather conditions, export demands, unpredictable crop diseases, higher production and processing costs and government subsidies for not planting crops. These, not the farmer, have raised prices.

### **Agriculture's Role in the Economy**

Agriculture is the world's largest and most basic industry. Even in an industrial society like the United States, it employs more people than steel, autos, utilities, and transportation industries combined. Three out of ten workers are employed in some job related to agriculture. Five million farmers are aided by six million workers providing the supplies farmers use, and eight million workers in the storing, processing and marketing of agriculture's products — food and fiber.

Agriculture supplies about 60% of all raw materials entering the economy. All of the coal, oil, chemicals and minerals comprise only about 35%, and forestry products about 5%. As the major supplier of raw materials for America's economy, agriculture has been the traditional bastion of free enterprise within an otherwise highly managed industrial economy. Economists consider agriculture a "pure" competitive industry, as opposed to monopolies, because of the very large number of competitive units (farms).

It is the high productivity, efficiency and competitiveness of the American family farms that has been the major hedge against inflation.

*Supply and demand* (see any economics textbook for a full explanation of this concept) is the cornerstone of free enterprise, yet much of "the farm problem" results

from manipulated imbalances between the vagaries of "supply" and the imminence of "demand." Thus the farmer has no way of receiving a stable monetary return on his essentially *risky* investment.

As two former Secretaries of Agriculture explained this point:

"People have talked about the farm problem in this country for at least 40 years," stated Clifford Hardin in 1969. "The basic difficulty stems from our ability to produce more than we can sell domestically and abroad." Orville Freeman added, "We have always had a farm problem of sorts. Initially, it was a problem of producing enough; now it's a problem of producing too much." Today, the trend may be reverting back to scarcity again.

### History of the Farm Problem

Before 1900, agriculture the world over had a problem of producing enough food to get by. After 1920, however, American agriculture was capable of producing *too much*. As Orville Freeman said, each extreme of food production reflected "the farm problem" of its day, but that golden transition period, 1900 to 1920, was a time in which the right number of farmers produced the right amount of food at the right price. It was the "Golden Age of Agriculture."

The "Golden Age" peaked in World War I with war demands putting an artificial inflation on food supplies and prices. In 1920, a flash depression struck America's business, as often happens soon after a war. Business overcame it within a year, but agriculture did not. Farmers lost their European food market, produced "too much," and prices plummeted downward more than 50 percent. Farmers feverishly produced more so they could earn more, but that only drove prices lower.

Since America was still heavily *rural*, the agricultural depression slowly migrated from poor farmers to richer factory workers. As one plow company executive said at the time: "You can't sell a plow to a busted customer." According to many scholars, the seeds of the 1929 crash were found in this "farm problem."

By 1930, the sickness in agriculture had spread to the rest of the economy. In 1932, cotton sold for 6¢ a pound, pork for 4¢ a pound, wheat at 38¢ a bushel, and corn for 32¢. Nearly 15,000 banks closed their doors, but for every bank that went broke, more than 100 farms went bankrupt first. Foreclosures on farms increased from 20,000 in 1919 to more than 250,000 per year in 1933.

### Government Farm Programs

In 1933, President Franklin D. Roosevelt and the U. S. Congress saw "the farm problem" as being overabundant crops at low prices, and they launched the U. S. Government on a program of crop subsidies and controls to regulate plantings. Over 40 years later, this subsidy program continued to lavish large funds to large farm operators, while forcing smaller family farms off the map. This was hardly the "solution" needed.

Senator Abraham Ribicoff expressed majority sentiments recently when he said: "For three decades, under Republican and Democratic administrations alike, we've allowed this subsidy-and-control program to become a self-perpetuating empire, almost with a mind and ambition of its own. Farmers don't like it. Tax payers and consumers stagger under its weight. It doles out billions to people who don't need help, and dribbles pittances to people who do." Thankfully, many of these programs are being phased out.

A more academic analysis was given in *Economics*, by McConnell. "... The farm program has failed to get at the cause of the farm problem. Public policy toward agriculture is designed to treat symptoms and not causes. . . . It is to be emphasized that production restriction programs are in substance a government-sponsored attempt to give some measure of monopoly power to the last major industry in American capitalism which approximates pure competition. Restricting supply in relation to demand in order to increase receipts is the stock-in-trade of the monopolist. And this is precisely what the farm program has attempted to do in seeking to solve the surplus problem" (p. 623). Really, our farm surpluses were imported.

Farm income in 1973 set an all-time record, yet total farm income statistics of a country as large and varied as the U. S. hides most of the income instability of regions and individual farms. The floods over the Plains and the blizzards in the Rockies contributed to the death of over 250,000 head of beef cattle in 1973, worth close to half a billion dollars.

### The Anatomy of a Steak

The sudden rise of beef prices in 1973 triggered a housewives' boycott of beef. Some few took the time to study the situation to find out *why* beef was scarce, but most beef eaters assumed that scalpers all along the way were profiting at the consumer's expense. A look at the many steps necessary in the evolution of a steak, however, put these "young wives' tales" to rest.

A cow produces only one calf each year (at best). In 1970, 37 million beef cows dropped 29 million calves, of which seven million were kept by ranchers for herd replacements, 2.7 million calves died in infancy, and 300,000 died during their first year. This leaves only 19 million new beef cattle each year for market. The calf nurses for six months, is weaned and pastured for another four to six months, is moved to a feedlot for six months, then sold to a packer for slaughter.

One calf to market requires 2500 lbs. of grain, 450 lbs. of protein supplement, and 12,300 lbs. of hay, silage, and pasture (plus tremendous investments of labor and capital) before he reaches a marketable weight of 1,000 lbs. From that half-ton animal, the packer can sell only 615 lbs. of dressed carcass to the retailer, who in turn trims off 183 pounds of fat and bone, leaving only 432 lbs. of steaks, roasts and hamburger.

In 1972 and 1973, due to weather and the Russian wheat deal, feed grain prices jumped 82% in one year, and other feedstuffs jumped 230% in the same year. Feed costs account for almost 80% of the total cost of fattening beef. The second largest expense is *interest rates*, which shot up to 10% in 1973. It's no wonder then that meat, milk and eggs temporarily shot upward in price in 1973.



### The Banker as Investment Speculator

Bankers may have no desire to become farmers, and vice versa, but the financial operation of capital expenses and interest rates is as closely connected to farming as to any other self-employed profession. The Nebraska Agricultural Experiment Station recently published the results of an eye-opening economic study showing just how much capital a young man needs in order to realize a modest \$15,000 per year profit.

The study showed that the capital needs would range from \$250,000 for an "average" 480-acre corn-swine farm in eastern Nebraska, to \$1,765,000 for a 22,000 acre cow-calf ranch in northern Nebraska — just to earn \$15,000 a year.

Since most young farmers don't possess such a wind-fall, a large part of a farmer's costs of production are fixed debts, such as interest and mortgage debt, property taxes and equipment contracts. Farmers are therefore very vulnerable to any weather upset or general fall in price level, because they are heavy debtors, short of capital and unable for the most part to hedge their investments against any contingency.

To compound their "capital problem," most farmers must wait years for their investments to begin to pay. Most crops require a year to plant and harvest, livestock require from one to three years, fruit-bearing trees take a decade or longer, and farm woodlots and forestry undertakings take even longer.

### Death and Taxes

As the saying goes, "There's nothing as sure as death and taxes." In the case of the farmer, the two are intertwined — taxes are killing him! The graduated *income tax* particularly penalizes the farmer, whose income is widely variable from year to year. Farmers in many areas only have one good crop year out of three, so the taxes during his one good year wipe out the cash buffer he needs for the two lean years.

The capital gains tax is another problem. This adds to

the speculator's incentive to buy farmland as an investment (for a tax write-off) rather than for growing food. This accentuates the rise in land values and tends to remove land from the hands of owner-operators (farmers) and into the hands of absentee landowners (speculators) whose sole aim is to profit from buying, holding, and selling nonproductive acres.

The inheritance tax is a double-death blow to many farmers. The tax on an inheritance can be up to 77% of the worth of the inheritance. Since the "estate" is usually composed of relatively fixed assets (land, machinery, buildings and stores), potential inheritors face the back-breaking problem of assembling enough cash to pay the tax on what would rightfully be theirs by the biblical law of land inheritance. It's no wonder the majority of farm children leave the farm for the city, thus losing \$100 billion in farm assets each generation in favor of tax collectors, bankers, and speculators.

Property tax is yet another burden putting a special squeeze on the farmer. Property taxes have shot up from \$450 million to \$3,000 million between 1940 and 1971, taking an increased cut of the farmer's net income, from 10% in 1940 to 17% in 1971. Even if land is idle, property taxes drain the land of its potential cash resources. Since all land "improvements" increase taxes, this is a further incentive to let land deteriorate.

In the Lake States, for instance, timber land that was taxed according to the market value of the standing timber was taxed so high that the owners had to cut the timber to pay the taxes, and divert the land into farming. But the land was marginal for farming, so the owners went bankrupt. And the land further lost its nutrients by erosion attacking the unprotected soil. The land then reverted into the hands of state and local government, due to foreclosure for delinquent taxes.

This and other instances of the over-rapid development of land and the overtaxation of marginal farmland result from the fact that property tax as used in the U. S. is often based on *capital values* rather than on *current*

*income* from the land, which is the basis of the biblical tithing system.

### **State-Controlled Agriculture**

Does the answer to "the farm problem" lie in the collectivization of agriculture? There are many world examples to show it isn't! Marxist governments have assumed that agriculture, like any other industry, could be readily organized on a large scale under state control. The Communists, so far, have paid dearly for this misunderstanding. Lack of incentive caused food shortages which have become a drain on their economies and overall wealth. The decision to organize agriculture on a large-scale authoritarian collective farming system has cost the Communist countries literally billions of dollars in lost income.

Perhaps this should be a warning to the United States and other essentially free economies against the perils of monopolistic control, but Western Europe's "free" economy is rapidly going the way of socialized agriculture, much to its harm. The Common Agricultural Policy (C.A.P.) of the European Economic Community (E.E.C.) set minimum price levels for many key farm commodities. This encouraged over-production of some farm products (such as butter) at high prices, which in turn forced European governments to spend up to two-thirds of their national budgets on farm subsidies and resulted in hard-to-dispose-of surpluses. Free world trade without a world parity system does not solve the problem either. The recent "Russian grain deal" triggered a gigantic wave of speculator activity and large-scale panic buying, which in turn caused wild market fluctuations. Some made huge profits but many lost, including the American farmer and consumer. Some of the wheat sold to Russia at about \$1.60 per bushel was resold by them to other governments at \$4.65 per bushel.

### **Solutions to "the Farm Problem"**

So far, this booklet has stressed a descriptive analysis of the three major problems in American agriculture:

quantity, quality and economics. To most farmers, the "economic crisis" described in this chapter is the heart of "the farm problem," while the "quantity crisis" is the *outside world's* farm problem. The "quality problem" is represented by the national decline in health.

There are some piecemeal solutions available to mankind for the amelioration of these grave problems. But the purpose of this booklet is not to explain how subsidies, taxes, weather control, seed quality, grain distribution and government controls should be handled. Many agricultural colleges, including our own Ambassador College Agricultural Department in Big Sandy, Texas, have a sufficient amount of information about short-term soil improvement and farm management programs.

The purpose of this booklet, however, is to describe the ultimate solution provided by the Creator of the earth in His "handbook for Planet Earth," the Holy Bible. When these guidelines are applied TOTALLY to a whole nation — as they were in the past, and as they will be again in the future — these laws provide for the ultimate solution to mankind's agricultural ills.

The following chapter describes these ultimate solutions, as they apply to food quality, quantity and economics. Despite the horrendous state of current world agriculture, there is fantastic HOPE for the future!

## THE GOVERNMENT CRISIS:

# The Land and the Book

THE farm problems described in the previous three chapters are not only the fault of individual farmers, specific government programs, or particular industrial chemicals. The fault also lies with an intangible *system of government* which rules all lands and peoples. It is a world system based on the way of getting for self; it is a world against God and His laws of agriculture; it is *Satan's world!*

God owns the land. In the beginning, God created the earth as a challenge for man to rightfully manage, to build character in preparing to become a son of God. The use of *land* (to "dress and keep" the Garden of Eden) was and still should be man's primary occupation (Gen. 2:15). God undoubtedly spent many hours with the first man, Adam, giving him instructions about the proper ways to keep the land healthy, productive and beautiful.

By now, nearly 6,000 years later, it must be obvious that mankind has "multiplied," but he has failed to "replenish the earth." Rather, man has mismanaged his birthright planet, and squandered its resources. Experts of every discipline are increasingly pessimistic about the earth's chances to survive the twentieth century. The land is seemingly under a curse.

The handwriting is on the wall — unless mankind accepts revealed knowledge.

The Creator God has revealed knowledge of His spiri-

tual laws, which were perfectly designed to produce happiness, peace of mind and the abundant life. These laws provide a foundation for ALL knowledge.

God's law is His character codified, His way of life in print, His revealed blueprint for mankind's greatest fulfillment.

Agriculture is of primary importance within this godly system of law.

### Revealed to Patriarchs

Adam and his sons were the first farmers. Virtually all the Old Testament patriarchs were also farmers, trained personally in many cases by God Himself. "And Noah began to be an husbandman, and he planted a vineyard" (Gen. 9:20). "And Abram [Abraham] was very rich in cattle, in silver, and in gold" (Gen. 13:2). "Then *Isaac* sowed in that land . . . for he had possession of flocks, and possession of herds . . ." (Gen. 26:12-14).

Jacob, Joseph and Moses were all at some time in their lives "agriculturists." All of these men walked and talked with God, face to face, and received agricultural instruction from Him. When God formed a nation out of the sons of Jacob, God gave instructions to the new nation, through Moses, on how to use the land to reap the most abundant crops.

These laws, given through Moses, include the great immutable *spiritual* law of the Ten Commandments, and the *statutes* and *judgments* for civil national laws governing the conduct of the ancient Israelite nation. Although the Ten Commandments apply in principle to land usage, the laws relating specifically to agriculture are found in this second body of laws, the statutes and judgments.

The original statutes — like the spiritual Ten Commandments — are *not* some ritualistic regulations for the Mosaic period only. They are *not* a part of the animal sacrifices and oblations which *were* "done away with" by the sacrifice of Christ (Daniel 9:27). The statutes are laws created with perfect predesign to produce good results for any nation who will follow them. (Obviously nations are *not* following them today.) These laws, among other things, govern health, economics and agriculture. They

provide for blessings if obeyed, and curses if disobeyed. And they reflect the great law of *love* in the exercise of service toward mankind and toward God.

### The Land Sabbath

Primary among these agricultural statutes is the land sabbath: "... When you come into the land which I give you, then shall the land keep a sabbath unto the Lord. Six years thou shalt sow thy field, and six years thou shalt prune thy vineyard, and gather in the fruit thereof; but in the seventh year shall be a sabbath of rest unto the land, a sabbath for the Lord: thou shalt neither sow thy field, nor prune thy vineyard" (Lev. 25:2-4).

God anticipated their first reaction, and the same would be true today should a nation's leaders insist that a land sabbath be kept. "If ye shall say, What shall we eat the seventh year? behold, we shall not sow, nor gather in our increase: Then I will command my blessing upon you in the sixth year, and it shall bring forth fruit for three years" (verses 20-21). God is a diversified agriculturist (see Deuteronomy 32:13-14 and Proverbs 27:23-27), and he taught Israel to be the same way; therefore a farmer resting his crop lands would still enjoy meat, milk, eggs, wheat, fruit, dry vegetables and other volunteer garden greens during the seventh-year land sabbath, as well as a *triple* blessing on sixth-year crops.

Additional information regarding the seventh year is found in Exodus 23:10-11: "... Let it rest and lie still." The opposite of working the land is to "let it rest," and the opposite of tilling it is to let it "lie still." This law therefore helps guard against soil depletion by helping check erosion, by encouraging more plant and root growth, and by enabling the land to build and restore plant food used and not returned during the previous six years.

The seventh-year law also provides some additional time for repair and maintenance of buildings and grounds, fences, equipment, and for planning the next six years' operations. In ancient Israel, however, the seventh year meant much more than that. It was also a "year of release" for slaves and debtors.

“And this shall be the manner of the RELEASE: Every creditor that lendeth ought unto his neighbor shall release it; he shall not exact it of his neighbor, or of his brother; because it is called the Lord’s release. Of a foreigner thou mayest exact it again: but that which is thine with thy brother thine hand shall release; save when there shall be no poor among you; for the Lord shall greatly bless thee in the land which the Lord thy God giveth thee for an inheritance to possess it” (Deut. 15:2-5).

Additionally: “And if thy brother, an Hebrew man, or an Hebrew woman, be sold unto thee, and serve thee six years; then in the seventh year thou shalt let him go free from thee. And when thou sendest him out free from thee, thou shalt not let him go away empty: thou shalt furnish him liberally out of thy flock, and out of thy floor, and out of thy winepress: of that wherewith the Lord thy God hath blessed thee thou shalt give unto him” (verses 12-14).

After six years of working for someone else, everyone is offered an opportunity to try it on his own if desired, and with a “nest egg.” This system of land inheritance guaranteed a continuing physical life-support occupation for families and slaves generation after generation. Absentee ownership was discouraged, and land grabbing or empire building were prohibited and impossible, since God Himself divided all the land by tribes and families from the beginning.

If a man or his family were poor managers of the land, or failed in operating their inheritance, they were given a “fresh start” every 50 years (Lev. 25:10-16) in the Jubilee Year. This was a further measure to cut down land-grabbing absentee landlords from building real estate empires. “Woe unto them that join house to house, that lay field to field, till there be no place, that they may be placed alone in the midst of the earth!” (Isa. 5:8.) Again, here is a land law which, if obeyed as a nation, would solve major agricultural, social and economic problems.

### **Taxation vs. Tithing**

Today’s governments require twenty, thirty, and even fifty percent of their people’s incomes in taxation: income



tax; sales tax; federal, state, county, city, and local taxes; and various hidden taxes. This taxation, averaging one-third of all income in most Western nations, yields only a fairly inefficient and corrupt bureaucracy which frustrates its citizens.

God's law, however, reveals a tithing system that requires only about 10 percent of the family income to finance the operation of church and state. God's way is so "simple" (a *straight* percentage) that almost nobody thinks it will work. Each nation has rejected this revealed system of taxation; and they are being cursed with higher rates of tax which buy less.

"And all the tithe of the land, whether of the seed of the land, or of the fruit of the tree, is the Lord's: it is holy unto the Lord . . . whatsoever passeth under the rod, the tenth shall be holy unto the Lord. He shall not search whether it be good or bad, neither shall he change it: and if he change it at all, then both it and the change thereof shall be holy; it shall not be redeemed" (Lev. 27:30-33).

Through the Prophet Malachi, God asks us as individuals and as *nations*: "Will a man rob God? Yet ye have robbed me. But ye say, Wherein have we robbed thee? In tithes and offerings. Ye are cursed with a curse: for ye have robbed me, even this whole nation. Bring ye all the tithes into the storehouse, that there may be meat in mine house, and prove me now herewith, saith the Lord of hosts, if I will not open you the windows of heaven, and pour you out a blessing, that there shall not be room enough to receive it" (Mal. 3:8-10).

### **Statutes on Livestock and Food**

Here is another of God's basic laws on animal husbandry and agriculture: "Ye shall keep my statutes. Thou shalt not let thy cattle gender with a diverse kind: thou shalt not sow thy field with mingled seed: neither shall a garment mingled of linen and woollen come upon thee" (Lev. 19:19).

Hybridization of plants and animals "seems good" to man, but the long-range results, after many generations, have not proven to be optimum. This is why God, the

Creator of plants and animals, *reveals* this knowledge. Mankind need not experiment, test, and document hybridization, since God revealed to man that the *long-range* effects are not best. (However, this does *not* mean we are saying that all hybrid herds and crops should be immediately liquidated. But to move toward upgrading cross-breeds [hybrids] by the use of quality purebred sires [or seed] of the dominant breed [or variety] is highly desirable. Cross breeding with high quality purebred stock produces no advantage or hybrid vigor if there are no recessive weaknesses to cover up.)

If sound selective breeding practices are maintained, both quantity and quality of production can be improved and can last indefinitely. God's laws are for man's lasting benefit. "And God said," in the beginning, "Let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind, whose seed is in itself, upon the earth: and it was so" (Gen. 1:11). God felt strongly enough about "kind after kind" that He repeated the phrase "after its kind" ten times in the first chapter of the Bible.

God promises: "If ye walk in my statutes, and keep my commandments, and do them; then I will give you rain in due season, and the land shall yield her increase, and the trees of the field shall yield their fruit. And your threshing shall reach unto the vintage, and the vintage shall reach unto the sowing time: and ye shall eat your bread to the full, and dwell in your land safely" (Lev. 26:3-5).

"And if ye shall despise my statutes, or if your soul abhor my judgments, so that ye will not do all my commandments, but that ye break my covenant: I also will do this unto you; I will even appoint over you terror, consumption, and the burning ague [fever], that shall consume the eyes, and cause sorrow of heart: and ye shall *sow your seed in vain . . .* and I will make your *heaven as iron, and your earth as brass . . .* and destroy your cattle, and make you few in number; and your high ways shall be desolate" (verses 15-16, 19, 22).

We don't *want* these curses, but we *DO* exactly what

God says will eventually bring them about. We disobey His statutes, including agricultural laws.

In the *future*, after these curses strike in full force, God's statutes *will* be obeyed, in *spite* of man! "... And your land shall be desolate, and your cities waste. Then shall *the land enjoy her sabbaths*, as long as it lieth desolate, and ye be in your enemies' land: even then shall the land REST, and *enjoy her sabbaths*" (verses 33-34).

### The REAL "Farm Problem"

The *true* farm problem is the same as the city problem, the national problem, and the world problem — man's selfish attitudes and man's wrong government. As long as man's nature, with its tendency to tear down, exploit, take to self and destroy, is allowed to dominate man's governmental systems there is no hope for agriculture, nor for the malnourished, hungry and starving masses of our world.

Throughout history, man has cut down the forests, overgrazed the pastures, and "mined" the earth's croplands — with hardly a thought given to replacing, rebuilding, restoring, and *replenishing* the earth's limited resources. With very few exceptions, *land use* has been synonymous with *land abuse*.

The *good news* is that the evils of human nature will soon be dominated by an outside power. Jesus Christ is *soon* coming back to Planet Earth! This time He is coming as King of kings and Lord of lords (Rev. 19:16). At the very climax of world troubles (Matt. 24:22), a strong world government is going to be established — divine government, the government of God, the KINGDOM of God — and it shall stand FOREVER (Dan. 2:44).

Jesus Christ will solve "the farm problem," first by CHANGING the present world rulership, and then by altering the *human heart*: "A *new heart* also will I give you, and a new spirit will I put within you: and I will take away the stony heart out of your flesh.... And I will put my spirit within you, and cause you to walk in my statutes, and ye shall keep my judgments, and DO THEM" (Ezek. 36:26-27).

## Agriculture in the World Tomorrow

What will be the result of obedience to God's laws? Again in Ezekiel 36:

"And I will multiply upon you man and beast; and they shall increase and bring fruit: and I will settle you after your old estates [inheritances], and will do better unto you than at your beginnings . . . . And they shall say, This land that was desolate is become like the *garden of Eden*; and the waste and desolate and ruined cities are become fenced, and are inhabited" (verses 11, 35).

A large percentage of the world's populace will live on prosperous family-sized farms. There will be rain in due season. Hunger and malnutrition will be a thing of the past. Literally everyone in every land will be able to enjoy fresh, clean, wholesome, tasty, nutritious food — grain and nuts, meat and dairy products, and fruits and vegetables in unbelievable variety and abundance. Man will work in HARMONY with God's laws.

"Therefore they shall come and sing in the height of Zion, and shall flow together to the goodness of the Lord, for wheat, and for wine, and for oil, and for the young of the flock and of the herd: and their soul shall be as a watered garden; and they shall not sorrow any more at all" (Jer. 31:12).

Agricultural shortages or surpluses will no longer be a farm "problem": "Behold, the days come, saith the Lord, that the plowman shall overtake the reaper, and the treader of grapes him that soweth seed; and the mountains shall drop sweet wine, and all the hills shall melt" (Amos 9:13).

Within the coming few decades, mankind will enjoy stable economic prosperity, radiant health, and a sense of satisfaction, accomplishment and fulfillment in life. There is a fantastic *hope* for the 21st century. Wonderful *good news* is around the corner in tomorrow's world. Jesus Christ will soon return to establish a new world order.

## ADDITIONAL READING

**The following books present the challenges faced by agriculture today.**

*The Closing Circle*, Barry Commoner; Alfred A. Knopf, Inc.

*Famine — 1975!*, William Paddock and Paul Paddock; Little, Brown and Co.

*The Hungry Planet*, Georg Borgstrom; Collier Books.

*Ill Fares the Land*, Dan P. Van Gorder; Western Islands.

*Population, Resources, Environment*, Paul R. Ehrlich and Anne H. Ehrlich; W. H. Freeman and Co.

*A Sand County Almanac*, Aldo Leopold; Ballantine Books, Inc.

*Silent Spring*, Rachel Carson; Fawcett World Library.

*Since Silent Spring*, Frank Graham, Jr.; Fawcett World Library.

*The Wastes of Civilization*, J. C. Wylie; Faber & Faber, Ltd.

**Those books listed below will help in understanding soil life and laws of soil fertility.**

*An Agricultural Testament*, Sir Albert Howard; Oxford University Press (1943) and Rodale Press (1972).

*Introduction to Soil Microbiology*, Martin Alexander; John Wiley & Sons, Inc.

*The Living Earth*, Peter Farb; Harper & Row.

*Organic Gardening & Farming*, Joseph A. Cocannouer; Arco Publishing Co., Inc.

*The Soil and Health*, Sir Albert Howard; Devin-Adair. (Of particular interest to livestock farmers.)

*Soil Development*, Edward H. Faulkner; University of Oklahoma Press.

*Soil Fertility and Animal Health*, William Albrecht; Fred Hahne Printing Co.

*Soil Fertility and Fertilizers*, Samuel L. Tisdale and G. E. Nelson; The Macmillan Co.

*Soil: Use and Improvement*, J. H. Stallings; Prentice-Hall, Inc.

*The Web of Life*, John H. Storer; New American Library.

*Weeds: Guardians of the Soil*, Joseph A. Cocannouer; Devin-Adair.

*Your Garden Soil*, R. M. Carleton; Van Nostrand Reinhold Co.

**The books which follow survey gardening and farming and offer helps in correcting many of the associated problems.**

*Acres, U.S.A.*, monthly newspaper; Charles Walters, Jr., editor.

*The Bug Book*, John and Helen Philbrick, P. O. Box 96, Wilkinsonville, Mass., 01590.

*Companion Plants and How To Use Them*, Helen Philbrick and Richard Gregg; Devin-Adair.

*Complete Book of Composting*, Jerome I. Rodale, Rodale Press, Inc.

*Food, Farming and the Future*, Friend Sykes; Faber & Faber, Ltd.

*Gardening With Nature*, Leonard Wickenden; Devin-Adair.

*Gardening Without Poisons*, Beatrice T. Hunter; Berkley Publishing Co.

*How To Have a Green Thumb Without an Aching Back*, Ruth Stout; Cornerstone Library, Inc.

*Malabar Farm*, Louis Bromfield; Ballantine Books, Inc.

*Natural Poultry Keeping*, Jim Worthington; Crosby Lockwood & Son, Ltd.

*Organic Farming*, Hugh Corley; Faber & Faber, Ltd.

*Organic Gardening and Farming*, monthly magazine; Rodale Press, Inc.

*The Organic Way to Plant Protection*, Jerome I. Rodale; Rodale Press, Inc.

*Step-by-Step to Organic Vegetable Growing*, Samuel Ogden; Rodale Press, Inc.

*The Stockman's Handbook*, M. E. Ensminger; Interstate Printers & Publishers, Inc.

## **ADDITIONAL READING**

The Worldwide Church of God publishes many colorful, informative booklets on a wide range of biblical topics. Four are listed below:

### ***Why Were You Born?***

Was humanity created and put here on earth by an intelligent and Almighty Creator for a definite purpose? And if so, what is that purpose — and why is humanity so totally unaware of it?

### ***Does God Exist?***

Can the existence of God be logically proven? Where did the first life come from? Can we know whether God possesses mind power?

### ***The Ten Commandments***

Are the Ten Commandments obsolete in today's chaotic world? Or are they as applicable now as they were when God gave them on Mount Sinai? Here is a book explaining plainly this inexorable living law — soon to become the basic law of the peaceful, prosperous, joyful World Tomorrow.

### ***This Is The Worldwide Church of God***

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