as France's new "philosopher king," however, has made him many enemies, some of whom have eagerly joined the literary attack. And the author of the original *Tel* article, is quoted as admitting a personal resentment against Attali.

Attali's advertisement in *Le Monde* appears to have been a last-ditch attempt to stem the rising tide of charges of intellectual dishonesty—not far from a capital offense in France. In it, Attali admits that the original version of his book contains significant omissions in quoting and giving credit to his sources but denies any deliberate impropriety, claiming that it was the result of pressures of work. His publisher has said that some of the mistakes were made because Attali was on an aircraft on the other side of the world when the final page proofs came through, and there was no way he could check them. The academic world is watching the political storm with wry bemusement, no doubt already preparing a safety net for Attali if he should decide to bail out from the corridors of power.—**DAVID DICKSON**

Mexican Agriculture: Crisis Within Crisis

Poor corn harvest shows need to improve rainfed farming by applying right technology, altering rural policies

Drought has added to Mexico's economic woes by causing a sharp drop in the country's corn production. The U.S. Department of Agriculture estimates that the recent harvest is 40 percent below the previous year's for the crop that provides the major staple in the Mexican diet.

As a result, Mexico's grain imports from the United States are expected to rise from 2.6 million tonnes last year to over 9 million this year, two thirds of it corn. At current prices the cost would be well over $1 billion.

The shortfall in corn underlines problems in Mexican agriculture that pose serious long-term difficulties for Mexican economic development. In basic terms, the demand for food created by rapid population growth is outpacing increases in agricultural production. This requires higher expenditures of scarce foreign exchange for food at a time when inflation, the leveling off of oil revenues, and devaluation of the peso are hampering the country's ability to service its heavy foreign debt and finance development.

Failure of the corn crop exposes the major weak spot in Mexican agriculture, which in many ways made remarkable advances in efficiency and productivity over the past four decades. Corn, known in Mexico as *maiz*, is grown throughout the country and, in the form of tortillas, is the basic constituent of the Mexican diet. An estimated half of the arable land in the country is devoted to the growing of corn and beans, but for the most part, corn is grown by the poorest farmers on the least productive land. Most corn is also raised under rainfed conditions and is therefore vulnerable to the extreme vagaries of the Mexican climate.

In effect, two clearly defined agriculture sectors have emerged in Mexico. One is comprised of commercial farms producing for an internal, urban market and for export; these farms are centered, primarily, in the irrigated lands in the Northwest, particularly in the states of Sinaloa and Sonora.

The other sector is dominated by subsistence farmers concentrating on growing basic foods, notably corn and beans. Peasant farmers operate in an almost infinite variety of conditions from semiarid to tropical. Many, for example, farm in mountainous terrain where soil erosion and early frost are chronic hazards.

A common view is that these peasant farmers were largely bypassed by the government programs supporting the expansion of agriculture. Attention was centered on those areas where application of modern technology and farming techniques would produce high yields. By the standards of developing nations, Mexico has a well-established agricultural education, research, and extension system and farm credit and marketing apparatus. And the government supports agriculture through a system of price guarantees for basic crops. But these programs primarily benefit the private farmers and members of cooperative *ejidos* who engage in commercial farming for the urban market and export trade.

Government concern about the underdeveloped sector increased during the 1970's as the unfavorable trends in agriculture at large became clear. Under President Lopez Portillo, whose 6-year term ended last year, a comprehensive program to attain self-sufficiency in food (*sistema alimentario mexicano*, dubbed SAM) was launched with loud fanfare. SAM gave unprecedented attention to development of rainfed farming and set 1982 as a target year for self-sufficiency in corn and beans. Drought, of course, intervened.

If the capital-intensive, market-oriented commercial agricultural sector is bumping against limits to growth, can the rainfed farming sector be made to close the food gap? The challenge is formidable.

Many rainfed farming areas are inaccessible and share handicaps common in developing nations. Transportation and marketing services are inadequate and storage facilities are lacking so that losses after harvest are often heavy. Credit is unavailable and many corn farmers cannot afford the supplies of hybrid seed which must be bought each year. They therefore use indigenous open-pollinated varieties that produce low yields.

Government researchers and plant breeders are criticized for failing to provide plant varieties adapted specifically to the great variety of growing conditions in Mexico. Corn, however, is not a particularly adaptable plant. Experts here say that efforts to breed drought tolerance into corn, for example, are unpromising because the plant is so highly sensitive to moisture and soil fertility. The International Center for the Improvement of Maize and Wheat (CIMMYT) near Mexico City, which developed the "Green Revolution" dwarf wheat strains widely used in Mexico and other developing nations, is working on corn varieties suitable for rainfed farming. The major effort for conditions like those prevailing in much of Mexico is to develop corn requiring a shorter growth period, perhaps 3 to 4 months rather than the 6 to 9 months now required.

Nevertheless, experiments aimed at improving the performance of small-scale farms offer encouragement. Bruce Johnston of Stanford University's Food Research Institute says that informed people hold "a reasonably optimistic

view of the potential for rainfed agriculture in Mexico."

Johnston notes that Mexican government officials show "a growing appreciation of the policies and programs required to develop that potential." He also finds that there is "a significant increase in the numbers of professionals required to carry out that kind of program."

An example is a new training program at the graduate level in the state of Puebla and which is administered by the school of agriculture at Chapingo near Mexico City. Applied researchers and extension workers are being trained to give assistance that is "technically appropriate for small-scale farming."

The large international development institutions, which have served as godparents to Mexican agriculture, are also focusing on rainfed agriculture. In the 1960's and 1970's much of the World Bank's support of Mexican agriculture went into large-scale irrigation projects. As the costs per acre of new irrigated land rose steeply, however, the bank began to shift emphasis to the rehabilitation and maintenance of existing irrigation projects. After the government in 1976–1977 initiated a national program for development of rainfed districts the bank became a participant. Currently, a $280-million loan over 1½ years is providing major support for the project.

A bank staff member says that the division of rainfed areas into districts similar to irrigation districts is providing a mechanism which makes it easier to improve marketing services, make credit available, and provide such things as crop storage facilities and deep wells.

The reduction of the corn harvest increases the political pressure on the government to take measures to benefit rural areas. For many peasant families, the corn crop is the major source of food and, if there is a surplus, provides their only cash income. In many areas, drought damage was so severe that fields were not even harvested. The subsistence farming areas have the highest rate of population growth and largest migration to the cities and thence to the United States. Because of the fall in employment in the domestic oil industry and construction, workers are said to be returning to rural areas in significant numbers. Political unrest in such areas is reported to be increasing as a number of takeovers of town halls by protesters appear to attest.

A major question now is whether the new administration of President Miguel de la Madrid will judge the improvement of rainfed farming as deserving of a high priority at a time of general economic stress. A policy aimed at national self-sufficiency in food which offers to lessen the country's foreign exchange problems holds obvious appeal. And a bolstering of the rural economy at a time of political unease should also be attractive. But real change will not come easily for reasons suggested by P. Lamartine Yates in a book* that provides a comprehensive assessment of Mexico's agricultural predicament and has attracted attention and controversy in Mexico (see box). In a key passage, Yates, a British-born economist who worked in the U.N. Food and Agriculture Organization and more recently as a bank adviser in Mexico, says, "Mexico indeed faces an agricultural dilemma at the present time, because her agricultural needs and agrarian institutions are at cross purposes."

—JOHN WALSH

*P. Lamartine Yates, *Mexico's Agricultural Dilemma* (University of Arizona Press, Tucson, 1981).

Agrarian Question Still Counts

In the 1970's, Mexico was forced to start importing foodstuffs on a substantial scale. Alarm resulted because agriculture had provided half the country's exports in the previous two decades. This had been made possible by Mexico's extraordinary success in expanding agricultural production between 1940 and 1965. Total land under cultivation increased by more than a third as land reform opened new tracts to farming and a massive government irrigation program more than doubled the area of land under irrigation to over 10 million acres. Particularly in the northwest states, capital-intensive farming in the U.S. and European style brought greatly increased yields. Total production doubled between 1950 and 1965.

In the mid-1960's, however, agricultural growth rates declined, falling from over 5 percent a year to less than half that. At the same time, population growth continued at an average 3 percent so that domestic per capita food production began to fall.

The slackening of the agricultural growth rate was attributed to several factors. The blame was first put on a run of bad weather. More significant, the supply of additional good land available for farming was almost exhausted and only a few unused areas remained where water resources could be readily tapped for irrigation. Most important perhaps, cost of production rose more rapidly than food prices and Mexican agriculture was subjected to the cost-price squeeze painfully familiar in both industrialized and developing countries in the 1970's. The trends put increasing pressure on the government for major changes in policy.

A serious constraint on changes in agricultural policy in Mexico is its land tenure patterns. Agrarian reform was the driving force in the Mexican Revolution early in this century, and land reform remains a major factor in Mexican politics. Hatred of the huge haciendas of prerevolutionary days resulted in tight restrictions on landholding. A legal limit of 250 acres on ownership of crop land exists, although the limit is evaded in various ways.

A dual system of landholding prevails with private farmers holding about half the total arable land and the other half being under cooperative or communal ownership. About 40 percent of the total is in *ejidos* formed on expropriated land. *Ejidos* vary greatly in farming efficiency and prosperity. Critics say the inflexible rules under which they operate impairs efficiency. *Ejidotarios* cannot sell or lease their parcels, but only return it without compensation to the *ejido* if they wish to leave. The rules, in fact, are often circumvented with the complicity of *ejido* presidents, which fuels political corruption that flourishes under rural bosses.

Private farmers operate many of the most productive farming units. Limits on land ownership and such things as obstacles to livestock production make it not unusual for private farmers also to skirt the legalities. As the demand for land has increased with rural population growth, private farmers have been faced with invasion by squatters and, often, expropriation of land by federal agencies. This has made many private farmers reluctant to increase their holdings to the maximum size or to invest in improvements.—**J.W.**