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Agricultural Technology Transfer Experiences in Mexico:
Lessons and Options

Nancy Contreras Moreno

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Abstract

The study analyzes the most representative rural development programs that focused on agriculture and were instituted in Mexico from 1940 to 2000. It examines them within their political and economic context including NAFTA. Demonstrated how these contexts have affected the programs. The six-year presidential period in Mexico is shown to limit the achievements of programs. The economic crisis Mexico has experienced since 1940 are shown to have influenced how poverty relief programs brought resources to rural areas and also led to a constant reorganization of rural development programs because of lack of resources. The analysis illustrates that shifts related to presidential politics led to a lack of continuity in policies to support the programs, such that, in most cases, program goals were not achieved. Rural development programs have sought to improve agricultural production and productivity, but agricultural producers have not had enough support and resources to respond as policy makers expected they would. Policies of decentralization, privatization of institutions and services in the agricultural sector, and participation of communities in planning, implementing and evaluating their own development programs were encouraged in the presidential period of Ernesto Zedillo, and they are also encouraged by the administration of President Fox (2000-2006). However, for participation to be effective, state institutions need to become more efficient in supporting producers.
Introduction

Mexican agriculture has historically been endowed with the important economic responsibilities of sustaining the population, producing exports, and maintaining adequate employment levels for the rural populations.

Development and dissemination of agricultural technology are duties of dependencies within the Ministry of Agriculture and the operative technology development and dissemination depends on policies and strategies implemented by the entire agricultural sector, which are part of the macro policies developed within each six-year presidential period. All the goals for agricultural development in Mexico have been defined over the last 40 years in order to be carried out within a presidential period.

According to the National Development Plans which are elaborated in each presidential period, rural development and the dissemination of agricultural technology are to be supported by the Ministry of Agriculture and the Ministry of Agriculture rely on the Extension Service, Research Centers and Agricultural Universities (Pearse, 1980; PEF, 1983, 1985, 1990, 1995; Hewitt de Alcántara, 1999).

To get a sense of how development and dissemination of technology in Mexico has taken place since 1940, it is necessary to learn about the evolution of the whole agricultural sector. Researchers, policy makers and technicians have argued that the rate of economic growth necessary to support the population’s needs would heavily depend on the transformation of agriculture (Salinas de Gortari, 1988; Tellez, 1994; Zedillo, 1994). Since 1990, Mexican policies have shifted towards intensive crop
production, technical improvement of traditional crops, such as corn, beans, wheat, and rice, and investment in the infrastructure, which has mostly been investment in irrigation. From 1995 to 2000, these development trends have intensified the involvement of NGOs, farmer organizations, and cooperatives, all of which have received increased support and encouragement from both the Mexican government and international organizations.

In Mexico, Market liberalization brought about by international trade agreements, specifically GATT in 1986 and NAFTA in 1994, led to the elimination of agricultural subsidies, agricultural inputs, financial support and technical assistance, and the gradual decline of state controlled prices. Presently, for agriculture to be competitive and to grow according to the country’s requirements technological transformation is a crucially needed; hence without adequate state subsidization, the agricultural sector will be marginalized (de Janvry, 1995; The World Bank, 1999).

Since the 1940s, agricultural programs have been inconsistent from one presidential period to another producing only modest agricultural sector development and increased poverty in rural areas (Hewitt de Alcántara, 1975, 1985, 1999; de Janvry, 1995; García, 1993; Reyes, 1997; and Barkin, 1998).

Since the 1950s, agriculture has been structured according to the complex political and economic interests of the groups in power (Hewitt de Alcántara, 1975, 1985, 1999; de Janvry, 1995; García, 1993; Reyes, 1997; and Barkin, 1998). Agriculture, until the 1990s, was governed by state controlled prices, the fluctuations in the markets, and
governmental decisions regarding production, productivity, and land use. The political and economic policies from the 1950s to 1990s were contradictory and forced the state to intervene directly to maintain an unproductive agriculture structure through subsidies and high social costs.

In addition to the limitations due to Mexico’s presidential system, Díaz Cisneros (1974); Hewitt de Alcántara (1975, 1985); García, (1993); Rodriguez and Santoyo (1998); Barkin (1998,1999); Yanagihara and Hisamatsu (1998); and The World Bank (1999) have argued that the main cause of failures in Mexican agriculture has been the result of governmental inefficiencies in the areas of administration, organization, and agricultural support services, and under utilization of local farmer organizations.

Based on an historical analysis of agricultural programs and field research, the main purpose of this paper is to analyze how inefficient administration, deficient bureaucracies, unskilled technicians and corruption have obstructed agricultural improvement. High-level technicians need to be supported by administrators knowledgeable not only in administrative matters but also in technical aspects. In the same token, the agricultural sector has been under the influence of high political interests. The lack of continuity in agricultural policies implemented in Mexico from one presidential period to the next has driven agriculture to excessive contradictions. The first part of the paper develops an overview of the evolution of the agricultural sector from the 1940s to 1990s. Following this overview is an analysis of the most representative agricultural technology transfer experiences in the 1960s, 1970s, 1980s and 1990s, followed by an analysis of current trends and options.
Evolution of the Agricultural Sector

Even though Mexico does not have an optimal environment for agricultural production, it does possess environmental conditions conducive to the significant development of agricultural production. The country has a total of 200 million hectares, and deserts cover 50% of the territory (de Janvry et al. 1995). Approximately 44.5 million hectares of land has potential for agricultural production, 24.9% of which is classified as having a high potential, 14% has medium potential, and 61.6% has low potential. Most of the land classified as low in agricultural productivity is concentrated in the north of the country (Garces et al. 1997:4). Twenty-one million hectares are used in agricultural production, and 30% of the total land used for agricultural production has irrigation. Irrigated land accounts for 50% of the cost of agricultural production, 70% of agricultural exports, and 80% of labor in rural areas, and it expends 80% of extracted water (Novelo, 1998; SEMARNAP/CNA, 1996: 23).

Approximately 76% of irrigated land is in the northern states. Mexico has the seventh largest irrigation infrastructure in the world. (Garcés et al. 1997). This bimodal agricultural production began in the 1940s with the implementation of Rural Development Programs, which are based on river basin management, and supporting irrigated areas and crops localized in the northern states. With a rate of 5.7 hectares of agricultural land per active member of the rural population, the demand placed on the land is comparable at present to those countries with high rates of population density, such as Japan, Taiwan, and Korea. However, the agriculture productivity in Mexico is lower compared to the national rate where 20% of active population produces 7.5 of GNP; in the last years this proportion has gone down gradually. Poverty in rural areas
has also increased since 1960s. According to the World Bank (1999a), in 1996, 24% of the population was living in conditions of extreme poverty, and 29% in conditions of poverty, which is 53% of the total population or about 55 million people living in poverty. The World Bank also indicates that in 1996 rural poverty reached 85%. In 1989 the daily income per capita in rural areas was 26% of that of urban daily per capita income.

Table 1. Performance of the agricultural sector 1970-1990

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<tr>
<td>Agriculture participation (%)</td>
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<tr>
<td>GDP</td>
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<td>9.3</td>
<td>8.2</td>
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<tr>
<td>Employment</td>
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<td>28.2</td>
<td>27.4</td>
<td>27.5</td>
<td>27.6</td>
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<tr>
<td>Active Population (%)</td>
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<td>Rural population (%)</td>
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<tr>
<td>(1970)</td>
<td>38.7</td>
<td>34.3</td>
<td>31.4</td>
<td>28.9</td>
<td>28.0</td>
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<tr>
<td>Average rate of annual growth</td>
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<td>GDP</td>
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<tr>
<td>Total</td>
<td>6.3</td>
<td>8.4</td>
<td>0.2</td>
<td>1.5</td>
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<tr>
<td>Agriculture</td>
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<td>4.4</td>
<td>1.7</td>
<td>-1.5</td>
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<tr>
<td>Grains</td>
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<td>5.0</td>
<td>1.9</td>
<td>-2.0</td>
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</tr>
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<td>Livestock</td>
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<td>2.8</td>
<td>1.6</td>
<td>-1.6</td>
<td>126</td>
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<td>Imports (million of Mexican pesos)</td>
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<tr>
<td>Total</td>
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<td>18.3</td>
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<td>Grains ('000 ton)</td>
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<tr>
<td>Exports (million of Mexican pesos)</td>
<td></td>
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<td></td>
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<tr>
<td>Total</td>
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<td>4.7</td>
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<tr>
<td>Agriculture</td>
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<td>9.0</td>
<td>6.5</td>
<td>10.9</td>
<td>1203</td>
</tr>
<tr>
<td>Fruits and vegetables</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Coffee, tea, cacao</td>
<td>26.7</td>
<td>-2.0</td>
<td>14.0</td>
<td>-8.9</td>
<td>415</td>
</tr>
</tbody>
</table>

From 1945 to 1965 the agricultural rate of growth was 5.3 % and diminished to 2 % from 1966 to 1976. From 1977 to 1981, it went up 4.4 % and went down to 1.7 % from 1982 to 1985. After 1985 growth went down dramatically (Table 1). This increase in agricultural production was not due to an improvement of the agricultural production systems *per se*, but rather was due to a large irrigation subsidy and greater inputs for irrigated areas. These increases in agriculture were the result of investments generated by the boom of the oil production in the 1980s. Since 1970, except for the period of SAM, agricultural performance has been poor, and it highly deteriorated after 1986 (Hewitt de Alcántara, 1975, 1985; de Janvry. 1995). In the period from 1982-1986, the country suffered an economic recession due to the fall of international prices of oil. In the national crisis, agriculture suffered less than other sector of the economy due to the high level of subsidization of the sector.

Despite the increased demand for agricultural products, the use of the land has remained without change, even with the large investment in irrigation. Although corn production has increased, productivity levels have remained low (Hewitt de Alacantara 1975; de Janvry, 1995; Garcés et al. 1997)

Inefficient subsidies, changes in the use of agricultural resources and the persistent “over valuation” of the peso stopped agricultural growth in the 1980’s (de Janvry, 1995, Garcés et al. 1997). Production diminished on an average of 1.5 % from 1986 to 1990. The economic crisis of the 1980’s blocked the possibility of maintaining the structure that had been supported before. Changes in prices, devaluations, and increases in the foreign debt stopped the funding flow to the agriculture sector, and the sector crashed in
this decade. For example, in irrigated areas the average rate of growth fell from 98,000 hectares in 1984 to only 21,000 in 1989 – the smallest quantity in many years. Maintenance for irrigation infrastructure diminished from 17,000 hectares to 5,500, and the rehabilitated areas went from 41,500 hectares to 6,000. Overall, public investments in agriculture fell by 76% from 1982 to 1989. The availability of credit also collapsed between 1985 and 1987 (de Janvry, 1995, García et al. 1997).

Agricultural exports had been increased compared to the national yield; however, average agricultural imports rates have also grown rapidly since 1974, which has transformed agriculture into being mostly an import sector. Since the 1960s, agricultural imports have been irregular; 4.6 million tons of grains were imported from 1977 to 1981; 5.5 million of grain crops imported from 1986-1990. In 1993 the cost of the agricultural imports was 2,324.26 million of USD, an amount that increased 73.23% by 1999, reaching 4,026.525 million USD, (INEGI, 1999). Taking into account the marketing of agricultural products, Mexico was an exporter until 1974, and since 1980 has become an importer. Since 1982 until 2001 only export products such as fruits and vegetables have maintained a significant growth (de Janvry, 1995; The World Bank 1998, 1999). Increases in Mexico over this period were directly to the demand of policy changes and were dependent on the subsidies provided by the government.

Guaranteed prices have also changed according to political priorities; for example, sorghum’s prices were guaranteed from 1965 to 1976, and then rice and corn were guaranteed in 1976. Since then, wheat prices have been reduced gradually. Unlike the case with prices, state intervention, irrigation infrastructure, credit availability and
federal expenditures in rural development increased until 1981. Since then, agriculture’s contribution to the GNP has declined compared to other sectors of the economy. Agricultural development has had to contend with a constant cycle of ups and downs, following the unsteadiness of economic and political policies in the country (de Janvry, 1995).

Researchers have argued that the agricultural collapse was not necessarily within agriculture but rather a result of the crisis in the subsidies system which was unable to support and maintain efficient agricultural development (Hansen, 1971; Díaz-Cisneros, 1974, 1992; Hewitt de Alcántara, 1975, 1999; Pearse, 1980; Mandujano, 1987; de Janvry, 1995). These researchers argue that because public finances were unable to keep transferring resources for agricultural development, production broke down.

In relation to credit, the main reform was the elimination of controlled interest rates so that by 1982 to 1989, interest from loans represented 11% of the total value of grains. As a consequence, the real interest rate suffered a marked increase, a fact that impeded the ability of small producers to reimburse credits. The unpaid debt was transferred to the PRONASOL (National Solidarity Program), and from here this debt was transferred to the public debt. Commercial producers with debts were transferred to private banks, and the debts of medium size producers were transferred to BANRURAL (National Rural Credit Bank). The subsidized credits administered by governmental institutions like BANRURAL and FIRA (Trust Fund for Agriculture) included only small producers and landowners. Both institutions were in charge for granting credits and insurance to agricultural producers.
All these factors have reduced margins in subsistence agriculture to the point where farmers can no longer invest in their farms, and are increasingly obliged to adopt unsustainable farming practices just to survive. Government agricultural programmes aimed at poor producers have diminished in scope and effectiveness. Agricultural services such as research and extension have declined as radical budget cuts left only enough funding to cover regular personnel costs (World Bank, 1998, 1999, 1999a; Yanagihara and Hisamatsu, 1998).

Analysts agree that from 1990 to 2000, as in previous decades, government macro-economic policies had a negative effect on the agricultural sector (The World Bank, 1998, 1999). An overvalued exchange rate supported by high interest rates undermined growth, as the sector produced mainly tradable products, and reduced investments. Government price and trade policies for agriculture have favored large commercial farmers who are for-profit sellers of grains and oilseeds (The World Bank, 1998, 1999, 1999a).

Mexico’s incorporation to the GATT in 1986 and NAFTA in 1994, forced the country to develop plans and programs to meet the needs and challenges imposed by its inclusion into international markets. Since 1980, the necessity of developing a more efficient economy that would be competitive and meet international requirements, has led to changes in the land tenure system and in the Ejidal System ¹. From 1990 to 1992,

¹ Ejido: Land distributed after 1915 to groups of twenty or more land ejidatarios. Until 1992 these land belonged to the state and were worked by ejidatarios. They could not be legally sold or rented. Roughly half of Mexico’s rural land areas comprised of 28,000 ejidos on which 3 millions ejidatarios and their families work.
the government began a profound restructuring of the land tenure system, which finally ended in 1992, with a series of modifications to constitutional article 27th and these modifications made it possible for legal transactions to take place on ejidos. To ensure the ownership of the land by means of titles, in 1995 The Program of Land Tenure was initiated (PROCEDE). As a result of this, more landowners can rent or sell the land. In addition, this means there are more landholders and renters who can form cooperatives but also, it is possible for outsiders to come in and rent larger plots of land to increase their production.

However, the performance of the sector has been lagging and growth has stagnated. Commercial agriculture has largely benefited from the reforms and has responded positively to the devaluation of 1994. The large ejidos sector is going through significant adjustment, increasingly integrating into the non-farm economy, diversifying income, and pursuing greater labor market participation and migration. Mexico’s rural poverty has kept widening in recent years especially among the rural indigenous population. Two-thirds of the rural population in the southern states is considered poor.

2 The most outstanding characteristics of Article 27th are the following: (a) It establishes that the nation is the original owner of the lands and water located within the national territory; (b) A special element of the concept of property in Mexico is introduced, in considering that the nation will, at all times, have the right to impose on private property the characteristics dictated by public interest; (c) It takes from the law January 6, 1915, the authority of the Mexican state to restore and provide lands to Indian communities and peoples. The lands would be taken from estates that exceed the limits for small property; (d) The article established the foundation for the creation of special institutions in charge of agrarian administration, as well as for the procedures for the restoration and provision of land. Reforms to the Article impacted Fractions 2 to 4, 17, and 19 of paragraph 3, and Fractions 10 to 14 were revoked. The basic reforms are as follows: (a) The distribution of the rural lands that had started at the beginning of the agrarian reform is ended; (b) The prohibition for companies (civil or mercantile) to become owners, through stocks and bonds, of rural lands dedicated to farming is lifted; (c) The foundation is laid for communal lands and to reach autonomy in their internal affairs, mainly in regard to their forms of representation and organization; (d) The foundations are laid for the mechanisms and requirements for the nucleus of the Ejido land and communal lands and the communal landholders to exercise their subjective rights as to the disposal of the communal property; (e) The organisms and authorities in
The high incidence and persistence of poverty among the indigenous population raises issues of equity, social inclusion, and access to productive assets—markets, land, labor capital, infrastructure, and technology (Rosenzwig et al. 2000; Guigale, et al. 2001). In one side, in 1994, former President Salinas de Gortari launched the successful signature of NAFTA, and the national and international media considered Mexico almost within the developed countries. However, behind all the media exposure, the rebellions of the indigenous people in the State of Chiapas showed that the country was far from being considered economically and socially stable.

In mid 1996 the later President Ernesto Zedillo launched a new national rural development program ‘Alianza para el Campo’ (APC) addressing the issues that affect smallholder production and income. The programme goal was to foster agricultural productivity through productive investment (a matching grant scheme) and the provision of more effective support services (research, extension, information, training) for a wide range of agricultural subprograms. The central point of APC was its decentralized approach and the delegation of administration and decision making to the States. The programmes aim was to implement a decentralized, demand-driven approach to channel technical and financial assistance directly to small farmers and poor communities (Zedillo, 1994, 1995).

The government has reviewed the policies in order to clarify the appropriate public sector role in each and identify how these responsibilities may be devolved to the States and “Municipios”. It has identified the important role that women and NGO’s play in charge of resolving controversies and administering and procuring justice in agrarian matters are
agriculture and hence funding has been devoted to support activities within groups. In the same token, the participation of private enterprises in improving production has been recognized and supported as well (The World Bank, 1998, 1999, 1999a).

**Rural Development Programs supporting agricultural change**

The desire to foster development by establishing agricultural projects, programs and policies to improve the well being of rural people is not new in Mexico. In fact, desire for social justice motivated the Mexican Revolution in 1910. Prior to the revolution, only a few wealthy landowners owned land. After the Revolution, when the revolutionary mandate was established in 1922, agrarian reforms were initiated. Since then, many efforts have been made to modernize agriculture and develop rural areas. However, substantial reforms were not implemented until the regime of President Lázaro Cárdenas (1934-40). Most significantly, President Cárdenas established policies, which improved small farmers’ access to their own land. (Díaz Cisneros, 1974; Hewitt de Alcántara, 1975; de Janvry 1995).

Planners determined that the *ejido* should be the basic production unit for campesinos to develop their indigenous organizations and to share power at local, regional and national levels. Financial institutions such as the *Banco Ejidal* were created at the mid-1930s to support the *ejidatarios*. In the six years of the Cárdenas presidential period, rural areas were restructured, and farmers were organized to establish a solid bases for their participation in future growth. During this period, cultural commissions of agronomists and educators worked in the countryside to provide technical assistance organized.
and to raise awareness of social, political and technical advances open to campesinos. The period was characterized by active rural participation in community activities. Campesinos were active participants in development planning and they were able to guide and control their own development. Cardenas appeared to establish an environment for further campesino development and the establishment of a political structure to support improvements in rural areas (Díaz Cisneros, 1974; Hewitt of Alcántara, 1975; de Janvry 1995).

However, in subsequent presidential periods support for campesinos was discontinued (Schumacher, 1981; Janvry, 1995; and Díaz Cisneros, 1974). President Manuel Avila Camacho (1941-1946) concentrated on the industrial sector and commercial farming. Irrigation districts were initiated, and land was granted mainly to entrepreneurial farmers who could solve, in the short run, grain production problems. Avila Camacho gave priority to industrial development, which was then seen as the panacea for curing the illnesses of “backwardness” throughout the nation. The agricultural sector was seen as a support base for development of the industrial sector. Irrigation districts were completed in the desert areas of the states of Sonora and Sinaloa, and commercial farmers continued receiving full support, while the majority of ejidal landowners and other small farmers were neglected. During this period, campesinos were blamed for not having the entrepreneurial motivation to take advantage of the resources the government made available to them. According to this rationale, responsibility for lagging development of the small-farm sector did not lie with the government, but rather with small farmers’ own lack of initiative.
President Miguel Alemán’s (1947-1952) invested heavily in regions that promised high returns, and did not invest where there would be significant social pay-offs. He selected two regions for development; portions of the states of Puebla, Oaxaca and Veracruz (‘The Papaloapan Basin’); and state of Michoacán (‘The Tepalcatepec Basin’). Two commissions were formed to foster industrial development, the “Commission of the Papaloapan” and the “Commission of the Tepalcatepec” (Barking & King, 1970; Díaz Cisneros, 1974).

Following the Cárdenas presidency, Mexico achieved a high rate of agricultural output, accompanied by high levels of rural under-employment (Díaz Cisneros, 1974; Hewitt de Alcántara, 1975,1999; de Janvry 1995). For four decades following World War II, the Mexican government equated rural development with investment in commercial irrigated agriculture. Investment in irrigated agriculture not only fed a growing population, but left substantial surpluses for export (Hansen, 1971).

Irrigated zones, especially in the Northwest, absorbed almost three quarters of government’s investments in agriculture after 1945. Emphasis was on the high yielding crops that characterized the “Green Revolution.” Other areas of the country did not benefit from these investments. Land under cultivation increased between 1945 and 1955 by more than two and a half million hectares, to almost ten million hectares. The sector growth rate was more than 6 % per annum. However, the bifurcation was so wide that 81 % of food output was produced by only 3.3 % of the country’s farmers. For the rural and urban poor, nutrition standards fell, despite the large output increases brought
about by this bi-modal policy (Hewitt de Alcántara, 1975, 1999; Redclift, 1982; de Janvry, 1995).

Despite the efforts invested in the agrarian reform in the years of industrial development in the presidential periods of Avila Camacho (1941-1946), Alemán (1946-1952) and Ruiz Cortínez (1952-1958), the rural population was characterized by its poverty and social inequality. For small farmers the gap was associated with a lack of access to modern technologies, irrigation infrastructure, mechanization, technical assistance, and credit. The lack of organizational structures to facilitates the acquisition of agricultural inputs, to negotiate credits with institutions, and to develop marketing strategies was also evident during the years 1940 to 1960. In the 1960s, renewed efforts and knowledge about the deficiencies of the Agrarian Reform, the urgent need of technological change and the modernization and investment in agriculture brought the implementation of strategies more focus on “modernization” and on technological change. Four of those programs will be briefly analyzed in the following pages.

**Initiatives in the 1960s: Plan Puebla**

During the presidency of Gustavo Díaz Ordaz (1964-1970) in Mexico a great deal of public attention was given to the role of improved varieties of wheat and rice in expanding food production. Breeding in order to improve the varieties of grains went on for many years in the developed world, but it was only following WW II that significant progress was made in low income Countries (Dalrymple, 1974; Hewitt de Alcántara, 1975, 1999).
When the Puebla Plan was developed in 1966, the country had been experiencing uneven development as a result of irrigation and dam building which produced millionaire farmers in the irrigated semi-desert in the Northern States and which continued to marginalize agriculture in other areas. As a result of the new technology, especially agro-chemicals and high-yielding crops, and heavy government investment in infrastructure, the situation became even worse for the individual cultivator, which led to agrarian conflicts in other rural areas of the country (Hewitt de Alcántara, 1999). The Puebla Plan was created to respond to this growing national problem. International institutions such as the Rockefeller Foundation were aware that many countries were experiencing tension because of the rapidly deteriorating status of the peasantry and they also promoted the Puebla Plan. (Pearse, 1980).

The state of Puebla had been experiencing tensions over agrarian questions prior to the introduction of the program. The number of landless laborers was large. Fifty-three large estates (“latifundios”) had been permitted to develop, or had survived, contrary to the existing agrarian legislation. Between January 1967 and August 1968, twelve invasions of these lands were reported in the press. While there was powerful opposition to farmers’ demands for a redistribution of land, funds were allocated by the state for providing credit and technical facilities to small farmers. These resources coincided with the search by international agricultural experts for a site in which to work out a methodology for transforming subsistence farms in rain-fed areas into commercial enterprises making use of improved technology (Pearse, 1980). The area of Puebla met the needs of the international groups because of its large population of small landholders, the possibilities of substantially increasing the production of maize (the
staple crop) under rain-fed conditions, and the high demand for maize (Puebla needed 425,680 tons per year and production reached no more than 239,440) (Pearse, 1980; Jiménez-Sánchez, 1988). The community of cultivators that the program addressed consisted of about 304,000 people, of whom 86 % directly depended on agriculture, and the rest of whom indirectly depended on agriculture. Thirty-one percent of the cultivators were small proprietors, 32 % held rights in ejidos, and 37 % were proprietors with ejidos as well. The communities and many of the small properties were created from the dissolution of large estates, and though properties had been equitably distributed, population pressure had made it difficult for sons to obtain land to work on, and a growing number of people whose holdings were so small that they regarded themselves as landless. Tenancies accounted for only 0.5 % of the land. The average size of holdings was 2.47 hectares. Only 1 % were larger than 10 hectares and about half were larger than 2 hectares (Díaz-Cisneros & Jiménez-Sánchez, 1974; Pearse, 1980; Jiménez-Sánchez, 1988).

In the early stages of the Puebla Plan, technicians offered “technological packages”, which originally consisted of a variety of hybrid maize, appropriate fertilizers, and necessary cultural practices. However, it was found that the local maize variety already in use performed as well as the hybrid. The changes proposed were relatively simple, but the amount of fertilizer recommended multiplied the cash costs of production several times. Therefore important changes in economic habits were required. For most people these changes could not be made without obtaining credit (Díaz-Cisneros, 1974; Felstenhausen and Díaz Cisneros, 1985; Jiménez-Sánchez, 1988).
The model of the Puebla Plan has of three components, namely the technical officers, the institutions, and the cultivators. According to critics (Darlymple, 1974; Pearse, 1980), the cultivators felt as if they were objects rather than subjects of the Plan. Indeed, the way in which the program was carried out demonstrated that, in most respects, they were treated as such. They had little voice in the planning of campaigns, in field trials, and in the evaluation of the results of the packages. Thus, the cultivators considered themselves as passive recipients of a technology developed outside the realm of their experience (Darlymple, 1974; Pearse, 1980). Participation in field trials was limited to some cultivators lending their land. For farmers, the Puebla Plan people used a plot in the village for an experiment in hybrid maize, but no one knew the results. Pearse, (1980) explains that “the researcher first selects a piece of land that answers to certain physical requirements and then finds out that its owner is so that he can borrow it for the experiment. Sometimes even the owner of the land does not know what we are doing there.” Failure to enlist the skills, experience, and knowledge of the cultivators seems to have contributed to the unfriendly relationships between Plan personnel and producers. This tended to solidify and distance the attitudes of each group to the detriment of both (Pearse, 1980; Sánchez-Hernández, 1987; Jiménez-Sánchez, 1988).

The Puebla Plan strategy, by permanently coupling credit and the new technology, achieved economic simplicity but also set up certain limitations, which were revealed in two locality studies. In one of these localities, it was noted that most of the small cultivators holding one or two hectares of irrigated land were not on the Plan. This meant that they continued to plant maize by traditional methods when, with adequate financing, they could have probably tripled their yields (Darlymple, 1974; Pearse,
One explanation given for their non-incorporation was that their small plots of land only required 40-60 day of work per year, so they depended on other occupations for their livelihood, relying on their plots only as a store of subsistence grain for family use with the minimum risk taken and little labor time expended. In particular, they chose not to join the Puebla Plan, which seemed to have certain social and political overtones, and also implied certain obligations and activities connected with the obtaining of credit, which clashed with their working hours. For example, attending Plan meetings was time consuming and many did not like participating in political demonstrations and joining political groups (Díaz-Cisneros, 1974; Sánchez-Hernández, 1987).

The Puebla Plan did, however, continue for 25 years, and it provides many experiences to evaluate. Producers interviewed in 1997 and 1998 agree on that the Plan gave them knowledge to develop their own improved seeds and cultural practices, so they did not have to depend on technology delivered by institutions that was not useful for their specific plot conditions. Producers agree in that PP helped them to organize and strengthen farmers’ associations. Thus, they were better able to negotiate for services from institutions providing credit, insurance and the timely delivery of inputs. They felt more confident that as a group they had more power to negotiate with institutions to persuade them to change their procedures when necessary. Twenty years ago, such negotiations were impossible for them (Díaz Cisneros, 1999).

Deficiencies in supporting technological change and the absence of macroeconomic stimuli brought about a crisis that resulted in the deterioration of the Plan (Díaz-
Cisneros & Jiménez-Sánchez, 1974; Hewitt de Alcántara, 1985; Díaz Cisneros, 1974, 1992). From the beginning of 1980’s, production values were unfavorable for small producers. The low income-yield of maize in that period brought about a reduction in the area cultivated, in the uses of inputs, and in production. The result was a return to conditions the farmers had experienced in the 1960’s (Díaz-Cisneros & Jiménez-Sánchez, 1974; Díaz Cisneros, 1974, 1992).

Furthermore, changes in macroeconomic policies, especially increased imports of maize, decreases in guaranteed prices, and increases in the costs of inputs, made maize production unsustainable for small producers. Many were forced to abandon their plots and seek full-time or temporary jobs outside their communities. In some cases, maize plots were totally abandoned, and in others, farmers dedicated just their free time to them. One lesson learned from this experience is that new technology should not be labor intensive. In this case, producers could make more money working away from their plots. New technologies need to be able to compete with non-agricultural activities (Hewitt de Alcántara, 1985).

Plan Puebla is considered as the beginning of a series of Rural Development Programs where the main focus is to direct resources towards solutions for concrete problems faced by small producers. Based on the experiences learned from this program, other rural development programs were and have been implemented in Mexico looking for improving rural areas. The difference with those programmes is that Plan Puebla was a regional program initiated by semi-state institutions, while the new programs where national initiatives conducted and implemented by the government.
The original design has been modified and a new model has evolved. The former model has shifted to one based on the idea of producers working together with the technicians and researchers who collaborated with the program. The new strategy was built around eight basic elements, which after 20 years, have been thoroughly analyzed. From those evaluations the lessons learned are (Díaz Cisneros et al., 1999:169-172):

(a) Research developed in small producer’s plots was more relevant than research developed on experiment stations.

(b) As part of the original technological package, improved varieties of seeds and/or the use of hybrids generated in experimental stations was not recommended.

(c) Changes in the diffusion strategy for research results were recommended through all the years of its implementation.

(d) By 1982, 97% of those producers included in the area of influence of the program had adopted the recommended technologies. This adoption process and technological change required 15 years of continuous assistance from technician, researchers, institutions, and producers.

(e) Producers’ adoption of technology in the area of influence was rational, and comparable to that which is carried out in European countries (Díaz-Cisneros, 1999).

(f) Because, in the first phases of the implementation of the program, 85% of the producers did not have resources to acquire the inputs recommended in the technological package, credit was crucial. In 1967, producers distrusted the development banks because of their inefficiency and corruption, which was well known. Because of this situation, producers and researchers approached private suppliers in the
area, and they agreed to offer credit. In 1969, after pressure was applied, development banking changed its procedures and functions.

(g) Insurance is a factor of major import in the adoption of technology. At the beginning of the program, producers distrusted the benefits of insurance and of the institutions that took charge of providing it.

(h) At the beginning of the program producers did not consider the need to create producers’ organizations, due to previous negative experiences. But as the program continued, the same producers noticed the advantages that forming groups brings, especially to facilitate the purchase and transportation of inputs and crops.

However, analysis of the Puebla Plan also shows that no technology is developed in experimental stations which is available for producers use in rain-fed areas like Puebla, the little technology available does not offer security. Technological change is a slow process. Professionalism and reputation of researchers and technicians among producers have a lot of influence for adoption and producers’ participation in programs. Continuous producer’s participation and interpersonal communications have been the main factors for the adoption of technology.

**Initiatives in the 1970s: Integral Program for the Rural Development (PIDER)**

PIDER began in 1969, when policy makers looked for an answer to the crisis in rural areas and to improve the economic and social situation of communities, for which the crisis became worse in spite of efforts of previous programs (SARH-UN-ECLAC, 1983). In 1971, a former Secretary of the Presidency pointed out the need to unify
efforts to solve the impediments in rural areas. But it was not until 1972 that they were able to unify all the programs of the public sector and create PIDER.

PIDER was established to channel substantial resources into low income, underdeveloped rural areas. It was designed as a giant nationwide program for financing a broad range of small investments at the community level, in order to enhance the productive capacity and the social infrastructure of these communities (Cernea, 1979).

PIDER was considered one of the broadest programs ever conceived in Mexico. It integrated a bigger number of sector components (fifteen) than had any other project. It mobilized resources and sought to serve a population of approximately 6 million people, equal to 21% of the total rural population. It included an extension of 957,370 square kilometers, equal to 48% of the national territory (Cernea, 1979). The potential beneficiaries were, preferentially, farmer groups located in regions that possessed productive resources but lacked the necessary infrastructure, services and social organization to launch or speed up their development.

PIDER was expanded during its existence. Its strategy undergone changes, and its administrative, institutional mechanisms were strengthened, made more flexible, and decentralized. It was administered by the Federal Secretary of Programming and Budgeting and operated as a program that involved multiple technical line agencies in a coordinated administrative-financial mechanism for channeling investment funds for specific small rural projects. The main component of PIDER was the participative

PIDER was developed in three phases:

- **PIDER I**, developed in 1975, as a program to coordinate and focus the rural development efforts in the most needy areas of Mexico with a high concentration of poor people. PIDER's strategy guidelines for implementing these investments and for achieving these poverty alleviation objectives can be summarized in seven points as follows:

  (a) The program operated as a new institutional mechanism with the intention of bringing together in a coordinated action the various public sector agencies that function in the rural sector.

  (b) It was implemented within a regional framework, so as to concentrate its activities within to well-defined radius, thereby promoting the development of regionally integrated groups of communities, rather than isolated development of each individual community.

  (c) It gave preference to the poorest regions and localities, which possessed potential resources but lacked productive and support services and social infrastructure.

  (d) The investment under the program was assembled into a medium-term regional development and into annual plans for each region.

  (e) The programs included directly productive and support works and services, and social infrastructure projects, with the directly productive category receiving the largest share of total financial resources.

  (f) It promoted village and public participation in the planning and execution.
(g) Planning and especially execution were gradually decentralized to the state and local levels, integrating locally the activities of existing line departments; specific allocations were made to state levels from central government funds in order to finance approved programs.

PIDER I was allocated to three major types of projects (Cernea, 1979, 1983; Schumacher, 1981).

(a) Directly Productive Investment (66 %): through the provision of farm development credit for beef, dairy cattle and other livestock purchases (29.6 %); rain-fed grain farming, beekeeping and fruit production development (4.9 %); improved livestock production for land clearing, fencing and stock handling yards (10 %); irrigation development, rehabilitation of soil and water (17 %).

(b) Productive support investment (22 %): through financing improved extension services, market and store construction, electrification and improved training. The project also assisted in speeding up clearance of land titles to newly established public land and supported technical services including agricultural research federal and, state, and village levels.

(c) Social infrastructure (12 %): through improving drinking water supplies, materials for self help village improvement projects, constructing primary schools and rural health facilities.

The scope of PIDER II, in 1977, generally followed the pattern of support given by PIDER I, with the addition of a rural industry component (7 % of productive investment):

a) PIDER II cost US $255 million, about 70 % of which financed directly productive investments including farm development credit (24 %); irrigation (16
%, livestock development (8 %), soil and water conservation (5 %); and fruit, forestry, and fishery production (4 %). The irrigation component developed about 34,000 of irrigated land, expected to benefit some 14,000 families; while the livestock investment supported livestock development on some 500 hectares of public land.

b) Productive support activities. Totaling about 20 % of the PIDER II project cost, were included to reinforce improvements in agrarian reform and farmer organization (3 %); extension services, including field demonstrations (about 5 %); feeder roads (7 %); rural electrification (3 %); marketing and store construction.

c) Another 10 % of the project investments were provided for social infrastructure, including improved drinking water supplies, materials for self-help village improvement projects, and the construction of elementary schools. In addition, PIDER II financed CIDER evaluation activities, as well as the staff training carried out under CIDER auspices (Cernea, 1979, 1983; Schumacher, 1981).

PIDER III (in 1979) consisted of various rural development investments planned for seventeen micro-regions located in four states: Sinaloa, Zacatecas, Yucatan and Guerrero.

Based on the experiences gained from PIDER I and II, the main objective of the new project was to increase the development impact of the previous PIDER rural development programs through actions designed to: (a) improve micro regional investment planning; (b) increase beneficiary participation in the program planning, execution, and evaluation and in the operation and maintenance of infrastructure; (c)
increase effectiveness of extension, credit, and farmer organization; (d) conduct feasibility studies for productive investments and for applied research; (e) provide training and specialized technical assistance; and (f) improve the monitoring and evaluation system.

On the whole, PIDER III financed the same types of activities as PIDER I and II. However, two new components were added (Productive Programs for Women and Nutrition) and two important ongoing components (Livestock and Agricultural Development) were significantly strengthened. PIDER III investments were distributed among four activities:

a) Directly Productive Components (61 % of project cost), such as: small-scale irrigation; soil and water conservation; crop, livestock, and beekeeping development programs; reforestation and a-forestation; fisheries; rural industries; and medium term development credit.

b) Productive Support Components (26 % of project cost), such as: extension service; applied research in support of the extension program; rural marketing facilities; organization of farmer groups and support of land-titling programs; construction, rehabilitation, and maintenance of rural roads; rural electrification; a program to generate productive employment opportunities for rural women; and feasibility studies for productive investments.

c) Social infrastructure (10 % of project cost), such as: elementary schools and boarding facilities; rural health clinics; a pilot nutrition program; village water supply system; and village self-help programs for community improvement.

d) Management (3 % of project cost) including: monitoring, evaluation, and staff training.
The PIDER III Project was targeted to benefit some 250,000 families in the seventeen micro-regions. About 46,000 families were to benefit from the directly productive investments under the projects.

The difficult economic situation confronting the country by 1980, and the budgetary restrictions instituted by the government, affected the implementation of PIDER III. The loan signed in November 1981, was for a total of US $175 million to be distributed over three years. However, because of country difficulties, only US $15 million (8.6%) were used by March 1983; therefore, a set of changes were envisaged to facilitate the uses of project funds, including an extension of the overall implementation period for PIDER III beyond 1984.

The program’s investments results are considered positive for irrigation. Positive results were obtained in roads construction, electricity, drinkable water and schools. Problems related to lack of interest of those in charge of the program and the insufficient number of specialized personnel participating in it (Nuñez, 1984). However, other programs such as cattle raising, conservation of soil and water, and rural industries, had minimal results. Evaluations showed that reasons for the small impact in these areas were deficiency in program design, absence of credits and technical assistance, organization, and market problems. The producers also had a very low participation rate (Cernea, 1979, 1983; Pearse, 1980; Schumacher, 1981, Nuñez, 1984).

The main deficiencies detected in PIDER’s implementation are organized in 10 points: (a) lack of inter-institutional coordination and intra-program; (b) planning deficiencies
for the scarce or null reliability of the information available; (c) duplication of functions due to the number of institutions and programs underway; (d) delay in the assignment and delivery of authorized budgets; (e) inconsistency between objectives of programs and real needs of the groups; (f) lack of collaboration between technicians and users of the program; (g) lack of uniformity in the evaluation of local needs; (h) inadequate technology for local socio-economic and environmental conditions; (i) insufficient training, organization, motivation and involvement of the producers; (j) marked social inequality because those producers who had more revenues also had easier access to land, machinery and credit, etc. (Cernea, 1979, 1983; Pearse, 1980; Schumacher, 1981, Nuñez, 1984).

In addition, infrastructure was under-utilized and poorly maintained. Industries were built without the necessary mechanisms for maintaining market flows or to support the levels of supplies needed. As a consequence, the extensive and expensive infrastructure built was allowed to deteriorate for lack of maintenance (Cernea, 1979, 1983; Pearse, 1980; Schumacher, 1981, Nuñez, 1984).

At the end of the seventies and beginning of the eighties, PIDER did not find continuity due to the profound basic crisis in which Mexican agriculture found itself. The economic crisis in 1976 and the later oil boom in the eighties, opened the way for a new program, supported by the financial resources coming from petroleum sales, and with the goal of alimentary self-sufficiency: The Mexican Food System (SAM, based on its name in Spanish). SAM faced the same structural and institutional difficulties that
prevented PIDER to obtain better results (Schumacher, 1981; Redclifft, 1982; Wessman, 1982).

**Initiatives in the 1980s: Mexican Food System (SAM)**

In March of 1980, President López Portillo announced a new national food policy calling for self-sufficiency in corn and beans by 1982 and in overall food imports by 1985, as well as a major effort to reverse the declining nutrition standards for some 35 million rural and urban Mexicans. Developed by the President’s Office, the analysis underpinning this policy announcement was called Mexican Food System (SAM). By the target year of 1982, the president was calling for production of maize to increase from 10 million to 13 million tons, and beans from 1.1 million tons to 1.5 million. SAM represented an attempt to establish a national food system to assure food self-sufficiency by means of massive but coordinated infusions of state capital and technical assistance. SAM was based on systems theory, with a technical rather than a social orientation. (Schumacher. 1981; Redclifft, 1982; Wessman, 1982, García, 1993). At the same time, an educational program concerning nutrition was implemented based upon the concept of the basic food basket, or “canasta básica”. The most radical aspects of the program were the immensity of the resources dedicated to it and the fact that the component programs were coordinated by means of a systems theory. At the same time as SAM, the Agricultural Development Law was enacted (LFA in Spanish), this law was oriented toward increasing the penetration of private capital in the countryside, conceptualized as the “recapitalization” of agriculture, in response to the flight of capital from the rural areas to the cities or to the exterior, with consequent effects upon production and employment (Schumacher, 1981; Redclifft, 1982; Wessman, 1982).
The most important aspect of the LFA was the creation of newly defined “production units,” in which public land or communal landholding units were encouraged to associate with small landowners or with public land for the purpose of soliciting low-interest loans and other state-sponsored support. The LFA created another level of land tenure, supposedly without affecting pre-existing tenure arrangements that included both private and social property. The significance of the new production units was that the agrarian reform of the post revolutionary period was finished. (Wessman, 1982).

At first taken by it, SAM seemed to suggest that Mexico would take a nationalistic path of development, turning away from foreign capital, as the engine of development. SAM, the LFA and other state policies emphasized that production must occur, in whatever units can get the job done. Even if non-capitalist production relations in the ejido produce a large share of the country’s staples, the industrial ad marketing complexes that use these products remained in their hands, whether private or state. Those who stand to lose the most were the intermediaries. Early in 1981, President Lopez Portillo suggested that Mexicans should re-evaluate the “social functions” of private property in Mexico. It was significant that campesinos and ejidos leaders were not consulted in the planning of either SAM or the LFA (Redclifft, 1982; Wessman, 1982). SAM identified 699 municipalities, which were grouped into “critical zones,” in order to eliminate the malnutrition in those groups whose alternatives for improvements were severely limited.” In urban areas the critical zones included “belts of poverty” surrounding the major cities and other areas of inadequate distribution of food. In rural areas, critical zones included primarily areas where agricultural productivity was either limited by soil and terrain or was highly vulnerable to drought. In both situations the
availability of food was insufficient. Farmers lacked the land and/or water to produce at a subsistence level and city workers did not have enough “purchasing power” to feed their families. (Wessman, 1982; Redclift, 1982). The crisis of international oil prices in 1981-1982, and the devaluation of the Mexican peso did not allow high subsidization of the peasant sector, and it was not possible to maintain SAM as a national program. Even though the SAM yielded significant increases in the production of grains, these increases were due to subsidies and not to the efficiency of agricultural producers (de Janvry, 1995). SAM resources made possible the building of a large agricultural infrastructure, including storage for seeds and machinery.

Research and extension services got the most resources in order to develop and disseminate technology. When it was not economically possible to maintain SAM, the large infrastructure deteriorated. After 1982, research and extension needed to restructure their programs to fit the new economic situation of the country.

**Initiatives in the 1990s: Alianza para el Campo**

In 1995 the later President Ernesto Zedillo launched a new program for his six-year presidential period *Alianza para el Campo* (APC) (1996-2000). The objectives of this program were six: (a) increase the incomes of the producers; (b) increase agricultural production to a level above demographic growth; (c) generate a surplus in commercial agriculture and livestock production; (d) improve the production of corn, beans, wheat, and rice to cover the needs of the population; (e) reduce the large differences in productivity, employment, and income among the different regions of the country; and (f) reduce rural poverty, preserve natural resources, and facilitate better distribution of
the population throughout the country (Zedillo, 1995; PEF, 1995). The Mexican Government explained that APC would be participatory and take federal reserves into account to solve agricultural problems throughout the country. The program promotes production in an environment of freedom and for that, it makes uses of free access to improved technologies and encourages the capitalization and training of human resources (Zedillo, 1994, 1995; PEF, 1995; CIGA 1995).

The project was organized after an analysis of the socio-economic and productive situation in the municipalities of the country. Eighteen different types of agricultural and livestock production units were classified and four groups of variables were evaluated: (a) development of the level of the producers; (b) improvement of the production system; (c) productive specialization and; (d) productivity.

Of 2,304 municipalities in the country 1,204 (50 %) were selected. The final sample included 777 municipalities with high marginality rates. These municipalities (45 % of the total) were located in 15 states out of 32. The total numbers of units with transitional economies was 2.4 million in the whole country, and from these, 1.6 million were classified as targeted areas. The most relevant characteristics of the selection criteria were 16: a) High dependency levels in the agricultural and livestock production; b) Productivity under the national rate; c) High use of human and animal work; d) High level of subsistence farming; e) High proportion of migrant workers; f) Reduced access to productive items; g) Strong relationship between agricultural and livestock production; h) Limited relationship with markets; i) High rate of small farmsteads; j) High dependence on the weather conditions; k) Limited productive organization;
k) Environmental degradation; m) High dispersion of the population; n) High post harvest loss; o) High number of indigenous people and women with important participation in the production; and p) High potential productivity for rubber, coffee, cocoa, flowers, tropical fruits, medicine plants, meat, and milk, and also forestry products.

Officials highlighted that the goal of these strategies of rural development is to eliminate the technological, financial and marketing restrictions, and in the same way, improve productive organizations and enterprise capacity. The support for the program is intensive extension, training and validation activities to incorporate available technology according to the ecological conditions and production systems in the area. These supports also include federal reserves to help the adoption of technology. The technology is specifically intended to improve the production of traditional crops, and support the diversity of production.

APC had eight specific programs (Zedillo, 1995; SDR, 1996 a and b): (a) Encouragement of productivity and technological change; (b) Productive diversification and rural employment; (c ) Women's programs and agricultural workers; (d) Extension and training programs; (e) Improvement in marketing and relations with markets; (f ) Operationalization; (g) Institutional coordination; (h) Federalization and revaluation of the rural activity.

APC was organized to foster decentralization, cooperation and participation among the federal, state and producers. Funding priorities were directed to irrigated and rainfed
areas with medium and high potential of production. Resources were directed to expand and improve irrigation in areas where it was possible to increase production by means of the adoption of modern technology. APC intended to maximize efficiency in transferring resources to the States. APC transferred resources to producers following a matching grants systems and a direct transfer of resources to producers through programs such as PROCAMPO (Program to Support the Marketing in Ejidos). PROCAMPO transfer of resources is provided according to the size of plots, the medium and big size plots have been the most benefited (Rosenzwig et al. 2000; Guigale, et al. 2001).

**Trends and Options**

Mexico owns a vast experience in rural development programs focused on improving production levels in rural areas. In the last forty years, it has implemented a variety of programs and policies that give experience not only in technical issues but also in administrative areas. The political changes carried out in the last presidential periods looking for improving the quality of life in rural areas, show an ability to perform deep and whole changes in the legal and political system in the country. Those programs implemented in the past give useful lessons to be included in the future programs to be implemented.

Mexican experience in forty years has gone from the technological change and farmers’ organization like in the Plan Puebla, infrastructure investments like in the case of PIDER, the industrial investment and farmers’ participation like SAM. Besides this, there have been efforts focused on decentralization, structural adjustment, privatization,
grassroots movements and NGO’s organization like in the case of Alianza Para el Campo. In spite of all those efforts, there has been a lack of continuity from one program to another and a need of keeping track of successes and failures to learn from such experiences.

Each program has been developed with a different institutional framework, new personnel and new philosophical approaches that make the new programs appear as a jump in the process. The lack of continuity is mostly due to the political discontinuity from one presidential period to another. It has been a characteristic of each new government to begin new programs without considering the technical-administrative assertiveness of the previous ones. There has been no institutional evaluation to learn about the successful mechanisms to planning, implementing, and evaluating those programs. There is a need to develop an institutional follow up system to keep track of the experiences not only institutional but also personal experiences from professionals that have participated in those programs.

It has been a characteristic in institutions that from one presidential period to another officials and personnel in the decision making positions change. The instability in government offices and the inexistence of follow up systems has caused a lack of commitment and lack of technical responsibility in the implementation of programs. Programs are organized just for getting accountable goals within short periods fitted into the presidential period. Beyond the presidential period there no goals stated or planned. There is almost no accountability for the actions of public officials. Matters such as the “right to know act” are almost totally ignored in Mexico. In most of the programs,
more than one institution has intervened in designing, planning, and implementing. But, in most of the cases, there has been a lack of inter-institutional communication and cooperation that has carried out a wasted of human and financial resources. The experience has been that if more institutions participate, there is more difficulty in coordinating decision-making and activities among individuals.

It needed accountability and continuity in long-term policies. The lack of continuity in policies has caused an unnecessary exhaustion of economic and human resources. Political interest surrounding agriculture has caused a demoralization of high trained technicians that in a long-term process give up technical reliability and validity under political pressures. It is well know among farmers that agricultural programs are more political and that are conducted for keeping the government image and control in rural areas. Technical qualification is always questioned. Since the 1920’s the state goals in Mexico have been dominated by the priority of keeping political stability. Peasants were grouped together in a well-organized confederation of peasants’ organizations, the CNC; yet the main objective of the agricultural system was not to produce more along with higher productivity, but keep peasants under firm political control. It is an understanding that the way to help small farmers is supporting and encouraging the formation of cooperatives, NGOs and associations, but still in the recent programs the question how, remains with no answer. The new programs emphasize farmers’ participation, organization, and self-management. But these goals are never actually defined or explained in detail. As a result, this approach often goes no further than the pronouncement stage, and is not reflected or put into practice during the course of the program. The official agencies just act following the inertia and, mostly act along their
traditional lines, defining what is to be done, how it is to be done, and who is to benefit. They entertain the conviction that the aspirations and needs of the rural population match the institutional priorities, and continue to stay in the certainty that the peasants know nothing of technology and, projects. For this reason, it is important to change the image and credibility of program among farmers. Without changing farmers’ credibility in government projects, they will be perceived as political initiatives in the same way they have been in the last decades.

Image change not only is necessary for farmers but also for technicians. It is needed a revalorization of their professional activities and develop an accountability system to recognize merits and to improve technical qualifications. As a part of institutional accountability, institutions need to develop databases including technical and administrative information to keep track of experiences, databases and libraries containing information about agricultural programs are currently lacking in the country.

It is needed to teach people to work in groups and associations, and revalorize the rural activities to include them as an active part of the Mexican economy. But even the recent programs fail in establishing long-term policies to empower rural producers and to develop long-term linkages among producers, governments and markets. At the same time, it is needed to develop policies to support the activities of the new groups formed.

Current challenges of Mexican agriculture need professionals trained not only in technical matter, but also in economics, marketing, finances, and communication.
Technical assistance service has been under the protection of the government and has a long history of negative reputation among farmers. For this reason, it is needed to change the image of the profession and make the service professional.

In addition, there are no technicians trained to successfully work in rural activities as private entrepreneurs. Most of technical agents were trained to work as officials, bureaucrats in government offices, but no as entrepreneurs motivated to develop their own business. To support the activities of the new professional it is needed to establish collaborative linkages among government-universities-research institutions-farmers. Technical areas in Universities need to include in their curricula areas like administration, communication, marketing, finances, planning, to give the new professional tools and knowledge to develop the quality of the job they are expected to perform.

Beside the establishment of institutions, it is needed to secure their long-term existence. It is expected that well trained professionals will perform successfully, and for this, campesinos will hire technicians. The permanence of rural enterprises will depend on the professionalism of their members. After decades of paternalistic policies campesinos as well as technical agents, are not used to pay or charge for the service. Campesinos are use to get technical assistance by free and technicians are not use to charge for the service. Private entrepreneurship will need a change of mentality in this regard. Technician performing a professional-private pay activities and campesinos requesting quality service.
In July 2000, after 72 years of regulation of the official party –PRI--, the opposition –PAN, National Action Party- won the presidential election. This means enormous shift for the Mexican agricultural policies and high probability the end of Alianza Para el Campo, as well. Many and deep changes are expected for farmers in rural areas. According to the elected president and following the international approaches, it is anticipated the support for privatization, a more open economy, and a bigger participation in world trade organizations. To be able to compete in the international arena, it is expected as well a bigger support for the integration of farmers’ organizations, where the participants and decision makers are mostly educated and/or big and medium size producers.

The participative approach followed in the last five years involves the formation of agro-associations (Fundaciones PRODUCE), these association comprises the integration of farmers, technicians and institutions. In the model it is expected that the group determine needs and solution. Fundaciones PRODUCE was created with the idea of becoming economically independent. In theory, the foundation determines the agricultural needs. Furthermore Fundaciones PRODUCE is independent enough to hire technicians and researchers to work for the foundation.

The research institutions have begun working under the scheme of “research by request” in which farmers express their needs and research centers focus on finding solutions for them. It is expected that privatization, decentralization, and NGO’s participation will be highly supported in this new presidential period.
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Aknowledgements

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